AN INSTRUMENTAL CASE STUDY OF THE STUDENT PERSPECTIVE OF A SMART PHONE MEDITATION APP IN RURAL VIRGINIA

by

James Allen Eggleston

Liberty University

A Dissertation Presented in Partial Fulfillment

Of the Requirements for the Degree

Doctor of Education

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ABSTRACT

The purpose of this qualitative instrumental case study was to explore how an introduction of a mindfulness meditation app (*Calm*) affects students in rural Virginia. The theory that guided this study was that of emotional intelligence, popularized by the efforts of multiple researchers including Salovey and Mayer (1990), and Goleman (1995), as it may influence and be influenced by the specific characteristics observed (Brown, Ryan, & Creswell, 2007; Charoensukmongkol, 2014; Waters, Barsky, Ridd, & Allen, 2015). Data was collected from 12 students by way of multiple methods including interviews, focus groups, journaling, an art project, researcher reflections, and field notes. Data was analyzed with NVivo and followed case study recommendations of Yin (2009) including coding, theme development, logic models, rival explanations, and pattern-matching. This particular geographic area was selected because of the dearth of research available on rural response, and the student perspective was sought as a response to direct recommendations found in recent research. The central research question was: How does a mindfulness meditation app affect students in rural Virginia? The interviews and written materials collected from each participant in this case study indicated a rich supply of advantages that may come forth by incorporating the use of a meditation app into one's schedule. From a collection of 21 recurring codes, four primary themes developed which include self-awareness and management as well as social awareness and management. Further, this study illuminated and corroborated earlier research on meditation advantages.

Keywords: case study, emotional intelligence, interpersonal, transcendental meditation, neuroplasticity, personal, psychological needs, relational, stress

Dedication

I remember, years ago, just before my doctoral process began, sitting with my father on the back porch of his home. He loved to rest there. I believe he felt a great calm sitting outside in the fresh air. In his retirement, he spent many hours there, perfectly content, one with the world. I recall, in one of those precious shared moments of calm, expressing my idea of pursuing a doctoral degree. My usually-quite-stoic father's face brightened significantly and he looked to me and said, "If this is something you want to do, I think you should. You have always had something special to give. I will help you any way I can."

My parents were not "from money;" however, they always found a way to help me financially and prayerfully. I didn't realize then just how much they sacrificed to be able to pass me $40.00 here and there. They earned this degree as heartily as I. And, though I needed the financial help earlier, I had arrived at a point in life where I no longer needed that type of assistance. But I also understood that in this process I was about to undertake, my father wanted to be a part. And so, I often went to him, sometimes for encouragement, and, every now and then, a few dollars. He died before I was able to complete the program; but, during those first years of course work, daddy would brag, to anyone who would listen, that his son would be a doctor. I'm not sure I ever convinced him that I wouldn't be the kind of doctor who could operate on people. My mother, still living, took up the mantle and has continued to support me with twice the energy and twice the prayer.

I thank God for His guidance throughout. I also recognize God in the two parents I have been blessed with in this life. I see God in my committee, my teachers, my friends, my family. And if the work contained herein helps others find their calm, like my father found on his back porch, then I will have continued a legacy so powerful and so needed in

this day. I share the same name as my father; an honor that has always made me proud. Today, I share this work with his name. So, find a porch, enjoy this read, and find as many moments as you can to reflect on God's blessings and feel this peace.

Acknowledgments

In addition to my mother and father, I wish to thank Dr. Barbara Jordan-White and Dr. Meredith Park for their invaluable guidance throughout. Their patience and tutelage as I learned the ropes of doctoral writing will always be appreciated. I thank all of the wonderful teachers I have had in this life; I am certain you have made more impact than you are aware. I thank the incredible participants of this study for your willingness to share both in small group and personal interviews. Your discussion on this topic and your unique viewpoints shed much-needed qualitative light on the subject of meditation and its relationship to emotional intelligence.

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List of Abbreviations

Adverse Childhood Experience (ACE)

Alcohol Use Disorder (AUD)

American Psychiatric Association (APA)

Autism Spectrum Disorder (ASD)

Attention Deficit Hyperactivity Disorder (ADHD)

Emotional Intelligence (EI)

Mindfulness Meditation (MM)

Post-Traumatic Stress Disorder (PTSD)

Social Emotional Learning (SEL)

Specific Learning Disorders (SLD)

Transcendental Meditation (TM)

CHAPTER ONE: INTRODUCTION

Overview

Several studies have determined that meditation training in schools can improve cognitive skills and increase social and emotional competence and well-being (Klingbeil et al., 2017; Schonert-Reichl et al., 2015). Recent research links meditation to the theory of emotional intelligence introduced by Salovey and Mayer (1990) in their seminal work (Charoensukmongkol, 2014; Klingbeil et al., 2017; Waters et al., 2015). Into each day, a small but growing number of U.S. schools have incorporated both transcendental and mindfulness meditation programs (Gutierrez, Conley, & Young, 2016; www.davidlynchfoundation.org). These programs attempt to address issues related to student stress and anxiety which plague and hamper student performance and overall health (Gutierrez, Conley, & Young, 2016; Williams-Orlando, 2013). Results indicated increased scores in regard to academic performance and positive behavior as evidenced by several quantitative studies and national media coverage (CWAE, 2014; Waters et al., 2015). A phone app has recently been introduced into school systems by teachers across the country as a means to affordably achieve the goals of other more expensive on-site programs. Though there is a recent study that garners the teacher perspective of the app (Boyle, 2019), the problem is there is insufficient qualitative data providing an in-depth exploration of how a mindfulness meditation app affects students in rural Virginia. In fact, the Boyle study, in its call for further research, suggests the student perspective as well as other aspects missing that would include a more diverse sampling. The purpose of this study was to explore how a mindfulness meditation app affects students in rural Virginia. This chapter introduces the background of meditation, the situation to self, the problem and purpose

statement, the significance in conducting this study, the research questions, term definitions, and chapter summary.

Background

The practice of meditation has been on the rise with several unique, secular programs being incorporated into the school day of K-12 students (Waters et al., 2015; Wickelgren, 2012; Wisner et al., 2010). This phenomenon is certainly not limited to U.S. schools as programs have developed in England (Mindfulness in Schools Project, DotB), Canada (Mindful Education), Israel (The Mindfulness Language), and India (The Alice Project) (Waters et al., 2015). Earlier research on meditation led to discoveries of its potential in helping "at-risk" students and those with clinical issues like depression, anxiety, and anger-management (Bögels, Hoogstad, van Dunn, de Schutter, & Restifo, 2008; Singh & Subhashni, 2014; Thompson & Gauntlet-Gilbert, 2008; Zylowska et al., 2008). Recent studies add to this body of research by focusing on the impacts of meditation on academic–social–emotional learning with non-clinical youth samples (Waters et al., 2015). General well-being, social competence, and academic achievement are areas that regularly surface when considering meditation program impact (Waters et al., 2015).

Two types of meditation are most often used in research studies on the topic: Concentration meditation and Mindfulness meditation (Wisner et al., 2010). With the first type, concentration meditation, a word, phrase, mantra, or object-focus is repeated with the purpose of quieting the mind. The common techniques used to achieve concentration meditation include transcendental meditation (TM) and the relaxation response method (Wiser et al., 2010). In contrast, the second common type of meditation, mindfulness meditation, does not involve use of a mantra but, instead, focuses the practitioner by way of awareness and acceptance of the present moment, often achieved by focusing on the breath (Wisner et al., 2010).

Among the most popular meditation practices are acem, centering prayer, loving kindness meditation, mindfulness meditation (MM), mindfulness-based stress reduction program, shamatha, transcendental meditation (TM), vipassana and zen (Waters et al., 2015). In the United States, mindfulness and transcendental meditation programs are the more frequent choice of program (Waters et al., 2015, p. 130). As such, this case study explores the secular mindfulness meditation app, *Calm*.

Historical Context

Much of the reasoning behind this recent surge in meditation program-use in K-12 schools has to do with research on student stress and its impact on behavior and learning (Gutierrez et al., 2016; Williams-Orlando, 2013), as well as recent studies that link meditation to improvements with regard to neuroplasticity of the brain (Tang, Lu, Feng, Tang, & Posner, 2015; Yang et al., 2016). Transcendental meditation, for example, was popularized in the 1970s by Maharishi Mahesh Yogi, who introduced the concepts to the United States. In fact, an entire community was established in Fairfield, Iowa in the 1970s in a bankrupt Presbyterian college that had been purchased by the transcendental meditation movement led by Maharishi (Weber, 2014). The new meditation university was established and the culture of the entire town changed dramatically (Weber, 2014). The Beatles were also drawn to the proposed benefits of meditation and their interest in the Maharishi community brought worldwide attention to its practice (Weber, 2014). For 40 years since, research has demonstrated "wide-ranging benefits" of meditation with regard to physiological well-being (Wendt et al., 2015, p. 312). The benefits include improved health (Paul-Labrador et al., 2006), psychological well-being (Eppley, Abrams, & Shear, 1989), improved social and emotional learning competencies (Alexander, Rainforth, & Gelderloos, 1991), improved intelligence and creativity (So & Orme-Johnson,

2001), reductions in substance abuse (Alexander & Rainforth, 1994), and enhanced work productivity (Frew, 1974). Meditation and its potential in academic development has been quantitatively assessed as can be reviewed in the above studies. By qualitatively examining a mindfulness meditation app for how it affects students academically, behaviorally, and socially, the potential to help a variety of students and conditions is brought to light.

Social Context

Programs that are successful in reducing stress and enhancing brain productivity are especially important to education as they promote learning and health (Wendt et al., 2015). Some school leaders are reacting to the research on stress and neuroplasticity by incorporating meditation programs into the school schedule. School leaders also recognize meditation programs for their potential as cognitive-behavioral interventions that enhance academic and psychosocial abilities while also increasing self-regulation and coping mechanisms (Wisner et al., 2010). Mixed results have been achieved with some schools showing small improvement while others seem to indicate an entire school culture has been affected by the program implementation (Klingbeil et al., 2017). For example, successful implementation in schools has transformed discipline response programs. One Maryland urban elementary school reported a complete replacement of detention with meditation and substantially lower rates of disciplinary infractions (Bloom, 2016). Other schools have shown positive academic response that may be linked to the program inclusion (Wendt et al. 2015). Further, the data obtained within this qualitative instrumental case study may shed light on how a mindfulness meditation app affects students in rural Virginia and how it might be achieved in other settings. Additionally, the results of this study will hopefully provide valuable intel to educational leaders, specifically school principals, as they seek out advantageous practices that increase the overall mental,

emotional, and academic health of students.

Theoretical Context

The theory of emotional intelligence (EI) was popularized by the efforts of multiple researchers including Salovey and Mayer (1990), and Goleman (1995). Emotional intelligence will be generally defined as the ability to process and carry out accurate reasoning with regard to emotions and their impact on enhanced thought (Brackett & Mayer, 2003; Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006; Lopes, Salovey, Côté, & Beers, 2005). Emotional intelligence has been recognized as a mediator between meditation and stress (Gutierrez, Conley, & Young, 2015; Salovey, Stroud, Woolery, & Epel, 2002). Further, research shows that meditation can have an impact on emotional regulation (Baer et al., 2006; Brown & Ryan, 2003; Charoensukmongkol, 2014; Wallace, 2006). In a study evaluating the impact of meditation programs, Charoensukmongkol (2014) found that practicing meditation could influence people's ability to maintain peace of mind during unfavorable situations and may improve people's ability to perform challenging tasks because of the clarity of mind and the stability of emotion achieved. Charoensukmongkol (2014) adds that meditation can promote "optimistic thinking and enhance their belief that they can effectively overcome any difficulty and obstacle" (p. 185).

Goleman's (2000) emotional intelligence competence paradigm has been widely used in research for its value in categorizing and measuring the four accepted domains of emotional intelligence and their corresponding competencies. The four domains identified in this competency model are: self-awareness, self-management, social awareness, and relationship management. Despite the growing interest in the benefits of meditation and its impact on emotional intelligence, insufficient qualitative data exists exploring how a mindfulness meditation app affects students in rural Virginia schools. No case study examining student

perspective of a mindfulness meditation app is found and this study seeks to fill this gap. By framing this research within the theory of emotional intelligence, this study extends and refines understanding of how a mindfulness meditation app affects students in rural Virginia.

Situation to Self

My motivation for conducting this study was to explore how a mindfulness meditation app affects students in rural Virginia with the hope that a clearer perspective on implementation might yield more successful replication nation-wide. This study falls within an ontological and methodological assumption as I explore the effects of a mindfulness meditation app by way of the viewpoint of multiple student participants and as I use inductive reasoning to facilitate an emergent design (Creswell, 2018).

This study was written in a constructivist paradigm and interpretive framework with multiple methods of rigorous data collection and data analysis strategies implemented. I believe that cause and effect are not certainties but are probabilities that may or may not take place (Creswell, 2018). I also believe that, when evaluating the overall effects of a program, multiple perspectives, and the multiple realities they represent, are necessary to achieve a more complete and rich understanding rather than the focused study of just one participant. Further, I believe that meaning is subjective and that in order to achieve a higher level of overall understanding, it is important to explore participants' subjective views on any given topic and to do so within the appropriate context. I believe that social interaction, history, and culture are paramount factors in an individual's development of meaning. As such, I recognize this paradigm certainly affects my interpretation (Creswell, 2018).

Philosophical Assumptions

Philosophical assumptions make up the theoretical framework that researchers use to

work with data collected. To better understand the interpretation of data shared by a researcher, these assumptions should be shared with the reader. There are three primary types described herein: Ontological, epistemological, and axiological.

Ontological. An ontological assumption is often described as the response to the question: What is the nature of reality (Guba & Lincoln, 1989). It is also referred to as the study of being (Crotty, 2003). With regard to the ontological assumption, I believe the reality of the mindfulness meditation app effect on students is best determined by examining multiple individuals and perspectives in order to find multiple forms of evidence by way of the themes that surface (Creswell, 2018). I believe in the value of multiple perspectives when exploring the effect this program has on individuals and the school.

Epistemological. Whereas ontology deals with what things are, epistemology concerns the way we know things. Epistemological assumptions have to do with understanding and sharing how we know what we know (Crotty, 2003). Regarding the epistemological assumption, I obtained as much subjective evidence, by way of open-ended collection methods, as possible from each individual. It is this collection of multiple subjective experiences that elicited new knowledge of how a mindfulness meditation app affects students. I conducted the research in settings comfortable to the student, familiarizing myself with their contexts, in order to better understand the perspectives they shared.

Axiological. The axiological assumption concerns the role of a researcher's values in each phase of the research process. With regard to axiological assumptions, I have been an active meditator for approximately 12 years. I have no formal training; only what I have learned from books and videos. I tend to be interpretivist in my axiological assumptions with regard to meditation and emotional intelligence and freely admit my inability to be completely objective.

As such, I brought this bias as I recognize the impact of meditation made to self over the years. I addressed these issues methodologically with inductive logic and triangulation using multiple rigorous data collection methods within a flexible emergent design (Creswell, 2018).

Problem Statement

Studies show clear advantages experienced by individuals with high levels of emotional intelligence (EI) that include improved cognitive potential and abilities within a growing myriad of applications (Doe, Ndinguri, & Phipps, 2015; Fallon et al., 2014; Mohagheghe, Shahrokh, Rizi, & Safikhanlou, 2015). Recent research indicates a link between meditation and emotional intelligence (Charoensukmongkol, 2014; Klingbeil et al., 2017; Waters, Barsky, Ridd, & Allen, 2015). Several studies have determined that meditation training in schools can improve cognitive skills and increase social and emotional competence and well-being (Klingbeil et al, 2017; Schonert-Reichl et al., 2015). A small but growing number of U.S. schools have incorporated mindfulness meditation apps into the daily schedule with mixed results regarding academic performance and behavior. This research sought to address the problems students face with regard to stress and anxiety and how a mindfulness meditation app mitigates this, personally and interpersonally, in rural Virginia. The problem is that there is insufficient qualitative data providing an in-depth exploration of how a mindfulness meditation app affects students in rural Virginia.

Purpose Statement

The purpose of this qualitative instrumental case study is to explore how a mindfulness meditation app affects students in rural Virginia. At this stage in the research, mindfulness meditation will be generally defined as a receptive, non-judgmental present moment awareness that allows for the capacity to attend to internal and external stimuli open-mindedly (Baer, Smith,

& Allen, 2004; Brown & Ryan, 2003; Grund, Schafer, Sohlau, Uhlich, & Schmid, 2019; Kabat-Zinn, 2003). The theory guiding this study is that of emotional intelligence, popularized by the efforts of multiple researchers including Salovey and Mayer (1990), and Goleman (1995), as it may influence, or be influenced by, the specific characteristics observed in participants of this mindfulness meditation app (Brown, Ryan, & Creswell, 2007; Charoensukmongkol, 2014; Waters et al, 2015).

Significance of the Study

This study provides needed qualitative data to the field of meditation, specifically to the introduction and implementation of the mindfulness meditation app in schools. According to Waters et al. (2015), the inclusion of a meditation program in schools is valuable; however, with schedule restraints and school requirements already in place, it is important to find the most significantly impactful programs for inclusion. Understanding how the mindfulness meditation app affects students in rural Virginia is important in validating its inclusion in schools. In order to justify this study, its empirical, theoretical, and practical significance is presented.

Empirical

Though quantitative studies have examined meditation programs in schools, no known case study of student perspective of the mindfulness meditation app in rural Virginia exists. As such, this study fills a gap in the qualitative understanding of how a mindfulness meditation app affects students in rural Virginia. The themes that arose by way of data collection and analysis further research in the field of meditation and its inclusion in daily school activities and provide examples of programs that can heighten emotional intelligence. This study also adds previously-suggested qualitative data to the research on meditation (Boyle, 2019; Klingbeil et al., 2017; Waters et al., 2015). The results of this study provide valuable intel to educational leaders,

specifically school principals, as they seek out advantageous practices that increase the overall mental, emotional, and academic health of students.

Theoretical

This study adds qualitative data to the growing body of research positively associating the benefits of meditation with heightened emotional intelligence (Shakir, Recor, Sheehan, & Reynolds, 2017). Studies also link the use of meditation to self-efficacy when mediated by emotional intelligence (Charoensukmongkol, 2014). Additionally, research indicates meditation negatively relates to general perceived stress directly and indirectly by way of emotional intelligence (Charoensukmongkol, 2014). Recent research on meditation indicates a link to well-being and lower anxiety (Wendt et al., 2015), academic achievement (Afalobi, Ogunmwanyi, & Okediji, 2009), and emotional resilience and coping strategies (Jung et al., 2016). Quantitative research specifically on school-based meditation program shows increases in psychological well-being, higher resilience, and lower anxiety among participants (Wendt et al., 2015).

This study also adds qualitative research to the growing field of educational neuroscience and neuroplasticity which pertains to the brain's ability to change as new learning occurs (Shaffer, 2016). According to studies, meditation programs increase executive function and frontal encephalographic coherence and brain integration (Travis, 2002; Wendt et al., 2015) as well as development of the pre-frontal cortex and processing of sensory information (Simkin & Black, 2014; Williams-Orlando, 2013). Research indicates meditation improves attention regulation (Klingbeil et al., 2017) and that, with regard to cognitive development and general well-being, high school students show a higher significant effect when compared to middle and elementary students (Waters et al., 2014). This proposed research fills a gap in the literature that is the insufficient qualitative data providing an in-depth exploration of how the mindfulness

meditation app affects students in rural Virginia. This study gives a missing voice to the students who may be impacted by the mindfulness meditation app and examines, through a qualitative lens, the why and how behind the gleans.

Practical

This study increases the understanding of this meditation app and explored potential explanations for its effectiveness in rural Virginia. By examining the themes that presented themselves by way of data collection and analysis, the study increased understanding for educational leaders, specifically school principals, of best-practices for the mindfulness meditation app. These best practices may now be examined for potential replication in other rural areas. Further, this study increased comparative understanding of this particular implementation versus less successful ones; answering how the program yielded its effects on students of this region. The strongest implications of this study were found in the mindfulness meditation app's potential for diminishing student stress and increasing overall wellness; all aspects that yield greater academic potential and heightened emotional intelligence (Campion & Rocco, 2009; Jung et al., 2016).

Research Questions

In an attempt to shed light on the dearth of qualitative data regarding how the mindfulness meditation app affects students in rural Virginia, research questions were posed. Research questions are imperative in focusing each step of a study. In short, the research questions determined the specific objectives of the study. In light of the purpose of this study, the following central research question framed this research: How does a mindfulness meditation app affect students in rural Virginia?

RQ1: How does a mindfulness meditation app affect students in rural Virginia academically?

Research indicates that meditation can have a direct academic impact on students by way of stress reduction, enhanced well-being, and enhanced ability to focus (Jung et al., 2016). Further, research indicates that meditation can indirectly impact academic achievement when mediated by emotional intelligence (Shakir et al., 2017). This research question adds qualitative data to the discussion and reinforces what is known and surfaces new themes and categories of impact. This question directly reflects the personal aspects of emotional intelligence and self-management (Goleman, 2000; Parrish, 2015) and the academic-achievement impact of meditation.

RQ2: How does a mindfulness meditation app affect students in rural Virginia socially?

Research indicates that meditation can have a direct impact on the interpersonal relationships of students (Wendt et al., 2015). Further, the indirect impact when mediated by emotional intelligence, includes potentially-enhanced abilities of empathy (Gutierrez et al., 2016). This question directly reflected the inter-personal aspects of emotional intelligence and meditation with attention on the social awareness and social skill categories of Goleman's emotional intelligence competency model described in chapter two of this study (Goleman, 2000; Parrish, 2015).

RQ3: How does a mindfulness meditation app affect students in rural Virginia behaviorally?

Quantitative research correlates meditation with pro-social behavior among K-12 and college students (Jung et al., 2016; Klingbeil et al., 2017). In fact, some schools have replaced much, if not, all, of their detention programs with meditation (Bloom, 2016). This question yielded qualitative data on how a mindfulness meditation app affects behavior in rural Virginia. The question also reflects the inter-personal aspects of emotional intelligence and meditation,

specifically addressing the self-awareness category of Goleman's emotional intelligence competency model described in chapter two of this study (Goleman, 2000; Parrish, 2015).

Definitions

1. *Emotional Intelligence* –Salovey and Mayer (1990) defined emotional intelligence as "the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action" (p. 189).
2. *Mindfulness Meditation* – A receptive, non-judgmental present moment awareness that allows for the capacity to attend to internal and external stimuli open-mindedly (Baer, Smith, & Allen, 2004; Brown & Ryan, 2003; Grund, Schafer, Sohlau, Uhlich, & Schmid, 2019; Kabat-Zinn, 2003)
3. *Neuroplasticity* - Shaffer (2016) defines neuroplasticity as "the capacity of brain cells to change in response to intrinsic and extrinsic factors" (p. 1).

Summary

This chapter introduces the background of meditation, the situation to self, the problem and purpose statement, the significance in conducting this study, the research questions, and term definitions. The problem is there is insufficient qualitative data providing an in-depth exploration of how a mindfulness meditation app affects students in rural Virginia. The purpose of this qualitative instrumental case study was to explore how a mindfulness meditation app affects students in rural Virginia. The issue of meditation and the potential advantages it can have on schools worldwide are supported with empirical, theoretical, and practical significance. The central research question is posed: How does a mindfulness meditation app affect students in rural Virginia? As such, academic, social, and behavioral aspects are explored in detail.

CHAPTER TWO: LITERATURE REVIEW

Overview

This chapter provides context for the research of meditation programs in schools, specifically a mindfulness meditation app (*Calm*). The chapter describes and connects Salovey and Mayer's (1990) early research on emotional intelligence to Daniel Goleman's (1995) theory of emotional intelligence as a theoretical framework for this study. Additionally, an in-depth review of existent literature on meditation, its relationship with emotional intelligence, and the effects of meditation and, specifically, in-school programs, was explored as well as the need for in-school programs that directly address student stress and anxiety. As a result of this literature review, a mindfulness meditation app surfaced as a popular option for in-school meditation inclusion; however, insufficient qualitative data is found providing an in-depth exploration of how a mindfulness meditation app affects students. This study fills this qualitative gap by exploring how the mindfulness meditation app affects students in rural Virginia. The chapter concludes with a summary of what is known, what is not known, and how this study addresses this gap in literature.

Theoretical Framework

Since the theory of emotional intelligence (EI) was formally introduced about 25 years ago, studies have abounded in theorizing personal, interpersonal, and academic ramifications (Garg, Levin, & Tremblay, 2016; Goleman, 1995; Goleman, Boyatzis, & McKee, 2002; Hui-Hua & Schutte, 2015). By examining existent research, certain recurring themes come into play. One quickly finds an obvious interplay between emotional intelligence and the sociocultural theories of Vygotsky (Miller, 2011). Secondly, the research indicates a clear correlation between increased emotional intelligence and cognitive development (Jenaabadi, Shahidi, Elhamifar, &

Khademi, 2015; Sahin, 2016; Sahin, Ozer, & Deniz, 2016). Emotional Intelligence was officially introduced by researchers Salovey and Mayer in 1990. Salovey and Mayer (1990) defined emotional intelligence as "the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action" (p. 189). It was then popularized by *New York Times* writer and author, Daniel Goleman (1995), who released his seminal book, *Emotional Intelligence: Why It Can Matter More Than IQ*. Goleman's theory proposed that emotional intelligence can be divided into personal and inter-personal categories and modeled by way of four components: self-awareness, self-management, social awareness, and relationship management (Parrish, 2015).

Certainly, there are other paradigms of emotional intelligence found in the literature. The three most prevalent models are the Salovey-Mayer (1990), the Bar-on (1997), and the Goleman competency model (2000) (Parrish, 2015). For the purpose of this study, the Goleman competency model was selected as it is often used in studies within the field of education and its corresponding competencies directly assess the student learning environment (Parrish, 2015). The four components of Goleman's model include self-awareness, self-management, social awareness, and relationship management; each with its own set of corresponding competencies which are explored within the methodology section of this study.

Self-awareness consists of a participant's understanding of their internal framework, inclinations, abilities, and feelings. These include their awareness of emotions and their effects as well as self-assessing strengths and weaknesses, and confidence in sense of self-worth and competency (Boyatzis, 2009; Parrish, 2015). Self-management involves a participant's level of managing internal states, urges, and impulses. Participants exhibit self-control in their ability to

keep disruptive emotions and impulses under control. Participants are also regarded as trustworthy. Conscientiousness and adaptability are integral aspects as well as a drive to achieve and take initiative to embrace opportunities (Boyatzis, 2009; Parrish, 2015). Social awareness is the level of awareness in handling relationships and the needs, feelings, and concerns of others. This includes empathy for the perspective of others, organizational awareness including power relationships, and a service orientation (Boyatzis, 2009; Parrish, 2015). Lastly, relationship management is the skill for facilitating desirable response from others. This includes pursuits that develop the abilities of others, inspiring others, catalyzing and managing change in others, using effective persuasion, managing conflict through negotiation, and directing collaboration toward common goals (Boyatzis, 2009; Parrish, 2015).

History of Emotional Intelligence

Though terminologies differed, the idea of emotional intelligence can be traced back to the work of E.L. Thorndike (1920) who defined social intelligence as "the ability to understand men and women, boys and girls, [and] to act wisely in human relations" (p. 228). In 1927, Charles Spearman released, *The Abilities of Man*, where he argued that cognitive ability and social-emotional abilities correlated (Garg, Levin, & Tremblay, 2016). In the mid-century work of David Weschler (1950), he argued that both cognitive and emotional capacities should be considered when measuring intelligence (Garg et al., 2016). Then, in 1983, Howard Gardener brought significant attention to non-cognitive abilities with his popular theory on multiple intelligences. This led to the emotion-focused research of Mayer and Salovey (1990) and their research that coined the phrase, emotional intelligence (Mayer & Salovey, 1990). Their research captured the attention of Daniel Goleman, a science writer for the *New York Times* who became

enthralled by Mayor and Salovey's research and wrote a book that popularized the theory of emotional intelligence and introduced the world to his theory.

The phenomenon of "emotional intelligence" began to spread in the early 90s and its definition and measurement tools became quite diverse as the topic proliferated into multiple venues (i.e. education, psychology, human resources, business management). Researchers soon sought to clearly define the terms and tools used to measure emotional intelligence (Bracketts, Rivers, & Salovey, 2011). The tools most widely used today are the Bar-on, the Mayer-Salovey assessment, and Goldman's competency model.

The Advantages and Applications of Emotional Intelligence

According to Goleman (1995) in his seminal work, he shared the advantages of increased emotional intelligence that connected emotional competencies and pro-social behavior that he proclaimed may be "an answer to violence plaguing our schools and as powerful and at times more powerful than IQ in predicting success in life" (p. 89). Other advantages of heightened emotional intelligence included improved cognitive potential and abilities within a growing myriad of applications (Fallon et al., 2014). Multitudes of case studies have been conducted exploring emotional intelligence and its relationship to everything from alcohol dependence (Mohagheghi, Shahrokh, Rizi, & Safikhanlou, 2015) to its impact on leadership abilities (Doe, Ndinguri, & Phipps, 2015). Emotional intelligence has also been shown to impact academic performance, career success, self-assurance, and improved general wellbeing (Afalobi, Ogunmwanyi, & Okediji, 2009).

A recent meta-analysis conducted by Ranjbar, Seyed, and Hossein (2017) revealed and validated earlier research that there is a correlation between emotional intelligence and academic achievement. An earlier meta-analysis conducted by Perera and DiGiacomo (2013) found the

same correlation. According to D'Amico and Guastaferro (2017), "Emotional intelligence is inversely associated with adjustment problems and positively associated with learning and academic success" (p. 19). This builds upon the research on ability and trait-emotional intelligence as an association with academic success; the higher the level of trait-emotional intelligence, the higher the level of academic achievement (Di Fabio & Palazzeschi, 2009; Marquez, Martin, & Brackett, 2006).

With regard to emotional intelligence and its impact on cognitive development, four areas of impact rise to the surface within this literature review: academic achievement, creativity, task performance, and adjustment and behavioral modification. Research shows a relationship between intelligence, emotional intelligence, and creativity (Sahin, Ozer, & Deniz, 2016). With regard to cognitive development, emotional intelligence is often associated with older, more foundational learning theories. Sociocultural theorists, for example, believe that a single unit exists that is comprised of both the individual and the cultural community mutually creating one another (Miller, 2011). Miller (2011) also shared Vygotsky's thoughts on this: "Learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers" (p. 175). Emotional Intelligence falls quite obviously into the sociocultural learning theory as emotional understanding and this interaction with environment and others is most certainly both a personal and an inter-personal phenomenon.

Academic achievement and creativity. A 2015 study conducted by Jenaabadi, Shahidi, Elhamifar, and Khademi revealed a statistically positive and significant relationship between emotional intelligence and academic achievement as well as creativity and academic achievement, and, lastly, emotional intelligence and creativity. According to this research,

emotional intelligence has a direct impact on academic achievement as well as an indirect influence on the same by way of creativity (Jenaabadi et al., 2015). These results are in line with other related studies (Guilford & Christensen, 1973; Hassanzadeeh & Imanifar, 2011). A correlational study conducted by Stamatopouloum, Kargakou, Konstantarogianni, and Prezerakos (2015) showed an increase in the sociability indicator which directly related to an increase in educational achievement in the senior high school students of their sample. In this study, emotional intelligence was shown to directly impact sociability, which, in turn, impacted academic achievement. Additionally, a study conducted by Sahin (2016) resulted in the same findings that a correlation exists between general intelligence, emotional intelligence, academic achievement, and creativity.

Task performance. In addition to the obvious cognitive advantages of emotional intelligence, others are found in less obvious applications. Studies indicate that greater levels of emotional intelligence are significantly associated with better task performance (Hui-Hua & Schutte, 2015). The obvious implications of increased task performance relate to both academic and job performance (Afolabi, Okediji, & Ogunmwonyi, 2009). Additionally, heightened emotional intelligence, and the core personality factor of stability it provides, directly links to performance, career success, and quality of life benefits (Afolabi et al., 2009; Hui-Hua & Schutte, 2015).

Adjustment and behavioral modification. Studies suggest a direct relationship between emotional intelligence and non-violence in schools (Adesina, 2012; Shahzad & Mashtag, 2014). The inclusion of emotional intelligence education promotes non-violence in schools (Ulutas & Ömerogˇlu, 2007). Obviously, non-hostile environments are more conducive to cognitive development. In the field of education, this area of research is quite possibly the

most promising and hopeful area of focus. As examples of violence and intolerance continue to occur, an exploration of ways to focus, not solely on cognitive development, but emotional development, needs to occur.

Students diagnosed with specific learning disorders (SLD) have been evaluated to examine the impact of emotional intelligence on student behavior ((D'Amico & Guastaferro, 2017). In these cases, conditions related to improving psychological adjustment included emotional beliefs, self-concept, and emotional intelligence (D'Amico & Guastaferro, 2017).

Heightened emotional intelligence has also been shown to increase the likelihood that students will transition successfully from high school to college. Increases in self-assurance and academic success are key factors in this observation (Afolabi et al., 2009). Additionally, emotional intelligence is associated with first-year GPA impact of college students because of the ability that students with heightened emotional intelligence have to adjust to university life (Garg, Levin, & Tremblay, 2016). With regard to university adjustment, the regulating of emotions during this time of change is positively associated with heightened emotional intelligence (Garg et al., 2016). Furthermore, adjustment to learning environments is also impactful upon behavior. Aside cognitive ability, the variables of positive affect, motivation, and adjustment utilities contribute to a more successful learning environment (Garg et al., 2016).

The Teachability of Emotional Intelligence

Research indicates that emotional intelligence initiatives can develop the traits and improve academic achievement (Qualter, Gardner, Pope, Hutchinson, & Whiteley, 2012). Further, research suggests significant cognitive advantages that students with high levels of emotional intelligence have over others and the lack of educational programming to expand emotional intelligence (Ulutas & Ömerog˘lu, 2007). This research also describes the heavy

focus placed on cognitive development and mental abilities and the impact that additional focus on emotional intelligence can have in increasing cognition.

Studies have been conducted to determine whether a program providing education in emotional intelligence would yield an actual increase in the same for children. The quantified results showed *significant* increase in emotional intelligence for this age group (Ulutas & Ömerogˇlu, 2007). Emotions that are negative in nature tend to preoccupy the individual's attention and interfere with his or her ability to focus elsewhere. When this happens, mental abilities are restrained (Afolabi et al., 2009).

As research supports that emotional intelligence is accepted as having a viable impact on cognitive development, both directly and indirectly, opportunities, lessons, and techniques for increasing emotional intelligence must now be sought. This review of research shows strong evidence to indicate that meditation accomplishes this goal yet remains severely underutilized in education (Charoensukmongkol, 2014; Gutierrez et al., 2015). Studies indicate an improvement in emotional intelligence by way of training (Dolev & Lesham, 2016). Studies involving training programs for teachers have yielded positive impacts on emotional intelligence, in addition to perceived differences in school level changes, stress tolerance, and assertiveness (Dolev & Leshem, 2016). Social emotional learning (SEL) programs are also being introduced to school programs that indicate positive effects on students' academic and social behaviors (Durlak, Weissberg, & Pachan, 2010; Freedman & Jensen, 2008)

In addition to the linkages apparent between meditation and emotional intelligence development, this review seems to indicate that researchers need to continue to explore practical implementations of meditation into curriculum. To convince educators that an increase in emotional intelligence is positive for cognition is perhaps the easy part. Giving educators the

tried-and-true tools and training to increase emotional intelligence in the first place is the biggest challenge.

The multitude of research done to indicate the cognitive, academic, and social benefits of increased emotional intelligence is certainly worth evaluating for curriculum development. Examples in this study also indicate that students with higher emotional intelligence are able to focus more clearly on academic tasks even when emotional events occur. Those with lower emotional intelligence are often distracted to a point where learning is arrested. Opportunities for students to learn better, healthier, and more loving and patient ways of coping with one another, their environment, and culture should be fostered in any learning environment.

The Relationship Between Meditation and Emotional Intelligence

Meditation has been scientifically identified as an evidence-based strategy for regulating emotion and self-care (Gutierrez et al., 2015). Furthermore, emotional intelligence is often selected as a mediator in meditation studies because of its predictive nature in regard to self-efficacy and stress (Charoensukmongkol, 2014). A relationship between meditation and emotional intelligence is also found in studies indicating emotional intelligence to be an effectiveness-moderator when meditation is introduced as an intervention (Guttierez et al., 2015). With regard to stress response, a higher level of emotional intelligence seems to indicate a higher response from individuals managing stress by way of a meditation intervention (Guttierez et al., 2015; Jung et al., 2016; Petrides & Furman, 2001; Salovey et al., 1999). Studies that span over 40 years indicate that meditators have a heightened emotional ability over non-meditators to reduce their response to stressors (Goleman & Shwartz, 1976; Gutierrez et al., 2015), to cope with distress (Kabat-Zinn, 2003), and to reduce negative emotions while also increasing positive

emotions (Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008). A meta-analysis conducted by Sedlmeier et al., (2012) concluded that meditation, indeed, provides significant therapeutic advantages.

Just as emotional intelligence can be examined by way of Goleman's four components of personal and inter-personal intelligence, so, too, are these components found measurable in the practice of meditation. This link to personal and interpersonal effects is especially important given the issues faced by students and their learning environments. Aguilar, Bedeau, and Anthony (2009), share that "many adolescents are overwhelmed and underprepared when faced with discussing and regulating their own emotions and those of others around them" (p. 4). This impacts achievement and when meditation is incorporated into curriculums many personal and interpersonal issues are mitigated.

Personal Aspects. Research indicates a positive relationship between meditation and an individual's emotional intelligence, including an enhanced ability to understand one's own emotions as well as a clarity of feelings, attention to feelings, and lowered levels of distraction (Charoensukmongkol, 2014). Regulation and control of emotions are also positively associated with meditation (Cahn & Polich, 2006; Charoensukmongkol, 2014). In controlled experiments, students who were provided a two-a-day meditation program as an intervention showed increased levels of resilience (Wendt et al., 2015), decreased psychological distress (Elder et al., 2014; Nidich et al. 2009; Williams-Orlando, 2015), increased intelligence and creativity (So & Orne-Johnson, 2001), decreased substance abuse (Alexander & Rainforth, 1994), increased work productivity (Frew, 1974), higher graduation rates (Colbert & Nidich, 2013), reductions in negative behavior in school (Barnes et al, 2003) and improvements in sleep, self-confidence, and general happiness (Wendt et al. 2015). Students of meditation not only develop these

heightened personal abilities, they also tend to recover more rapidly than non-meditators during periods of distress (Charoensukmongkol, 2014; Feldman, 2007; Gutierrez et al., 2015). Further, research indicates that meditation produces increases in positive emotions (Fredrickson et al., 2008; Gutierrez et al, 2015).

Furthermore, emotional intelligence heightens cognitive development whenever life situations occur that would weaken the concentration of individuals with less emotional stability. Negative emotions can preoccupy individuals and interfere with their attempts to focus; thus affecting overall achievement potential (Afolabi et al., 2009). Simply put, when students are faced with chaos or trials, those with advanced levels of emotional intelligence can better cope with situations and continue to manage their focus and attention on tasks at hand.

Interpersonal Aspects. Interpersonal, or relational, advantages have also been recognized in meditation-centered research that include reductions in problematic behavior among youth and improved overall well-being (Hill & Updegraff, 2012; Klingbeil et al., 2017). In addition to the obvious impact that personal gains from meditation would yield on a learning environment, measurable increases in social and emotional learning competencies can be found (Alexander et al, 1991; Wendt et al., 2015). Entire school cultures have been positively transformed by program implementations including increased levels of attendance and improvements in social relationships (Schoenert-Reichl et al., 2015; Wendt et al, 2015). Studies show that meditation programs impact social, behavioral, academic, and physical health outcomes (Klingbeil et al., 2017; Yoo et al., 2016). Research also shows that meditation can diminish social anxiety and aggression in elementary students (Yoo et al., 2016). Recent research with children in a classroom setting indicates that meditation programs may increase the empathy students have for one another and their abilities to understand each other's perspectives.

In the same study, students who participated in the meditation program were rated more prosocial and accepting of peers (Schoenert-Reichl et al., 2015). Meditation programs have also yielded benefits for adolescents with conduct disorders and attention deficit hyperactivity disorder (ADHD) (Williams-Orlando, 2013). These will be explored further in this chapter.

Relationship of a mindfulness meditation app to Emotional Intelligence

Quantitative studies found in research examined meditation and its impact on meditators (Wendt et al. 2015). Further, research has directly linked the secular *Calm* mindfulness meditation app to heightened academic results (Boyle, 2019). Lastly, research shows a direct link between meditation and emotional intelligence (Charoensukmongkol, 2014; Gutierrez et al., 2015; Jung et al., 2016); thus, connecting the three to one another. The following describes the relationship of meditation and emotional intelligence.

Quantitative Case Study of Meditation Program in Schools. A 2015 quantitative study was conducted to specifically evaluate a meditation program. The study included 194 students and the program intervention was provided to 141 of them. The results indicated meditators had heightened levels of emotional resilience, increased levels of quality sleep, happiness, and self-confidence. The study also illuminated the impact the program had in diminishing psychological distress as well as the program's former success in raising graduation rates, lowering school dropout, reducing negative behavior, and improving physical and emotional health (Wendt et al., 2015).

Potential Advancements to theory. Research indicates the significant negative impact that psychological distress can have on the learning environment (Wendt et al., 2015). Determining how a mindfulness meditation app affects students in rural Virginia is valuable in

filling the qualitative gap. This new information might inform a proactive response that can be replicated throughout the country.

Related Literature

In addition to the theory of emotional intelligence, this chapter reviews applicable topics. These topics include: existent knowledge of meditation among youth specifically, as well as research specific to the in-school meditation program use. Also included is research that indicates the need for in-school programs like a mindfulness meditation app that address the issues of stress and anxiety and the damage to student achievement and well-being these conditions yield.

Existent Knowledge of Meditation and Youth

Research specific to the impact of meditation on youth has surfaced multiple categories of positive response. The categories fall into both the physiological and neurological perspectives. These categories include impacts on academic achievement, behavior, well-being and anxiety, emotional resilience and coping strategies, psychological well-being and self-efficacy. Additionally, this chapter features research concerning multiple student subsets positively impacted by the practice of meditation.

Impact on academic achievement. Research indicates that students of meditation often exhibit heightened cognitive control in comparison to non-meditating groups (Charoensukmongkol, 2014; Wendt et al., 2015). From a physiological and neurological perspective, research indicates that meditation can impact learning by way of inducing neuroplasticity in the brain (Simkin & Black, 2014; Waters et al., 2015). Shaffer (2016) defines neuroplasticity as “the capacity of brain cells to change in response to intrinsic and extrinsic factors” (p. 1). Research indicates meditation improves attention regulation (Klingbeil et al.,

2017). Research also seems to indicate that, with regard to cognitive development and general well-being, high school students show a higher significant effect when compared to middle and elementary students (Waters et al., 2014). According to studies, meditation programs increase executive function and frontal encephalographic coherence and brain integration (Travis, 2002; Wendt et al., 2015) as well as development of the pre-frontal cortex and processing of sensory information (Simkin & Black, 2014; Williams-Orlando, 2013).

Impact on behavior. Meditators tend to exhibit more control over behavior (Aston, 1997; Charoensukmongkol, 2014). Student truancy levels are improved as a result of transcendental meditation programs (Wendt et al., 2015). Research indicates meditation can diminish symptoms of ADHD which often lead to classroom behavioral issues (Simking & Black, 2014). Additionally, studies show a positive impact that meditation can have on individuals and substance abuse (Alexander & Rainforth, 1994). Further, an entire academic field know as educational neuroscience is being incorporated into classrooms in a format that combines meditation and brain science to combat discipline issues (Cavazos, 2016). In these endeavors, teachers are equipping students with practices that increase focus and attention, and, in the process, are teaching students about how the brain functions. In a pilot study, no students in this particular school were suspended for the year, a significant change, and disciplinary referrals decreased (Cavazos, 2016). As part of this inclusion of neuroanatomy teaching, students learn three techniques for de-escalating conflict and reducing stress: movement, time, and breathing. Meditation is an activity that helps return individuals to the present moment by often focusing on the breath and significantly reducing behavioral transgressions (Cavazos, 2016).

Impact on well-being and anxiety. Meditation is often positively associated with life satisfaction and lower depression (Charoensukmongkol, 2014). Additionally, as individuals gain control over extraneous thinking, meditators can experience decreased rumination (Klingbeil et al., 2017) and less anxiety (Elder et al., 2014; Simkin & Black, 2014). A recent meta-analysis indicates meditation improves mental well-being and diminishes anxiety (Waters et al., 2015). From a neurological perspective, meditation can positively impact the amygdala and hippocampus regions of the brain when they are negatively impacted by stress or trauma (Orlando-Williams, 2013). When educational neuroscience is included in the meditation training, students learn about the impact stress has on the pre-frontal cortex which is responsible for problem solving, logic, planning, and organizing. These functions are impaired by stress, which limits blood and oxygen. During stressful moments blood is rushed to the amygdala which is, instead, responsible for emotion. When the amygdala is then given the power, responses lack control and are motivated largely by the negative emotion felt at that moment (Cavazos, 2016). Meditation can combat this response by returning individuals to a calm focus on breath, thus allowing the body to dissipate negative stress response; a process that can take as little as 90 seconds when negative mental rumination is controlled (Cavazos, 2016).

Impact on emotional resilience and coping strategies. In a study of high school students, transcendental meditation programs increased emotional resilience and, the more time students spent meditating, the higher the increase achieved (Wendt et al., 2015). Meditation has been shown, psychologically, to impact personal resilience, create positive outlooks, and improve self-esteem and self-confidence, as well as self-awareness and compassion (Williams-Orlando, 2013). Meditation also can diminish symptoms of depression (Simkin & Black, 2014).

Impact on psychological well-being and self-efficacy. Meditators tend to have higher levels of self-efficacy than non-meditators (Charoensukmongkol, 2014). They also overcome pessimistic thoughts more quickly (Brown et al., 2007; Charoensukmongkol, 2014). Meditation can increase levels of melatonin which aids in sleep and dopamine which is connected to pleasure (Williams-Orlando, 2013). Meditation can create improvements in body function (Simkin & Black, 2014) and can yield both a benefit of mental clarity and deep physiological rest (Simkin & Black, 2014). Meditation has also been shown to mitigate suicidal ideations (Britton et al., 2014).

Impact of Meditation Among Multiple Student Subsets

This section explores impacts from quantitative and qualitative meditation studies on unique subsets of students and adults, including students with mental illness and behavioral disorders, as well as examining its use among different social classes, a comparison of results among urban, suburban, and rural settings, and results among different age segments. This section further legitimizes the continued pursuit of insight into meditation programs that have positively impacted a wide range of different subsets; thus, adding to the generalizability of any attributes discovered. Research indicates that the benefits of meditation are available to a very diverse set of students; as diverse as can be found in a public-school system. Benefits of meditation have been studied with respect to specific groups that include students with Attention Deficit Hyperactivity Disorder (ADHD) (Meppelink et al., 2016), students with Autism (Black & Rosenthal, 2015), individuals with various forms of post-traumatic stress disorder (PTSD) (Kang, Erbes, Lamberty, et al., 2018), students with conduct disorder (Singh et al., 2007), students prone to substance abuse (Gryczynski et al., 2018), students with issues related to insomnia (Cheng, 2016), students with epilepsy (Leeman-Markowski & Schachter, 2017),

students with physical impairments like esophageal astresia (Andreotti et al., 2017), students with chronic pain conditions like functional somatic syndrome (Ali, Weiss, Dutton, et al., 2017) and juvenile fibromyalgia (Kashikas-Zuck et al., 2016), students suffering from depression and/or anxiety (Serpa et al., 2014), and students with suicidal ideations (Serpa et al., 2014).

Impact on Attention Deficit Hyperactivity Disorder (ADHD). ADHD has been recognized as a highly common childhood disorder with some estimates suggesting eight percent of children fall within its impact (American Psychiatric Association, 2013; Chimiklis, et al., 2018; Meppelink, Bruin, & Bogels, 2016; Travis, Grosswald, & Stixrud, 2011). ADHD among children and adolescents can yield inattention, impulsiveness, hyperactivity, and can impact social functioning and development (America Psychiatric Association, 2013; Meppelink et al., 2016). In addition to the personal and interpersonal effects of ADHD, there are also financial impacts on families as they pay expenses related to the treatment (Le et al., 2014; Meppelink et al., 2016). More often, medication is the choice for treatment; however, the effects are often short-term and many side effects come with the medication (Meppelink et al., 2016). The go-to drug most often prescribed for ADHD is methylphenidate, a psychostimulant, and, if this drug is ineffective, dextroamphetamine or atomoxetine may be administered (Meppelink et al, 2016; National Collaborating Center for Mental Health, 2009). Some studies indicate that children treated with medicine for ADHD for several years may show reduced growth and weight when compared to non-medicated peers (Faraone, Biederman, Morley, & Spencer, 2008; Meppelink et al, 2016).

The effects of meditation have been examined and show that practitioners may experience an increase in focus and sustained attention (Keng, Smoski, & Robins, 2011; Meppelink et al., 2016; Shapiro, Carlson, Astin, & Freedman, 2006). Studies also have indicated

potential benefits for students with ADHD that include improvement on personal goals, internalizing, externalizing, attention problems, happiness, mindful awareness, and increased attention (Meppelink et al, 2016; Bogels et al, 2008). Further, meditation programs have benefitted participants with respect to the domains of inhibition, objective aspects of attention, and self-reported ADHD symptons (Chimiklis, 2018; Schoenert et al, 2015).

Impact on Autism. Studies have investigated the impact of different meditation techniques and programs on students diagnosed with Autism Spectrum Disorder (ASD) (Black & Rosenthal, 2015; Cachia, Anderson, and Moore, 2016). The characteristics recognized in students diagnosed with ASD include deficits in social interaction and communication, as well as a presence of repetitive and often-restricted behaviors (American Psychiatric Association, 2013; Black & Rosenthal, 2015). It is estimated that one in 88 U.S. children are affected with ASD (Baio, 2012; United States Center for Disease Control). Other symptoms suffered by individuals diagnosed with ASD include anxiety, sleep deprivation, poor self-regulation, and sensitivity to certain sensory inputs (Black & Rosenthal, 2015). Students with ASD are often chronically stressed by social demands associated with school or work environments including bright lights, smells, and sounds (Black & Rosenthal, 2015).

In a study that examined transcendental meditation and its impact on ASD students, students experienced reduced stress and anxiety, improved emotion and behavior regulation, productivity, ability to tolerate and cope in social situations, improved ability to manage unexpected changes in routine, the ability to assume additional tasks, and a heightened ability to recover more quickly to stressful situations. Additional benefits included increased concentration, reduced test anxiety, improved sleep, reduction in tantrums, and reduced overall stress (Black & Rosenthal, 2015). Studies also show that meditation can have a positive impact

on the parents of students diagnosed with ASD including reductions in stress (Cachia, Anderson, & Moore, 2016). As studies show that parental stress can directly impact children's psychological well-being (Osborne et al, 2008), these improvements provide an additional, indirect, benefit to children with ASD.

Impact on Post-Traumatic Stress Disorder (PTSD). Recent studies have found the potential positive impact of meditation on veterans diagnosed with Post Traumatic Stress Disorder (PTSD) as a result of their involvement in the Iraq and Afghanistan war (Seppala et al., 2014). Results indicate a reduction in PTSD scores, anxiety symptoms, and respiration rate for participants in the active group when compared to those of the control (Seppala et al., 2014). Studies also indicate an eight-week transcendental meditation technique, when administered to veterans, reduced PTSD symptoms, reduced experiential avoidance, as well as a reduction in depressive and somatic symptoms. Further, the study showed an increase in mindfulness and quality of life (Kang, Erbes, Lamberty…2018). PTSD is certainly not a condition exclusive to veterans. Studies have examined the impact of PTSD on youth violence and found relationships between the two and recommend emotion regulation interventions like meditation that improve emotion regulation (Aebi, Mohler-Kuo, Barra, Schnyder, Maier, & Landolt, 2017).

Impact on Conduct Disorder. For students with conduct disorder, they often engage in "a repetitive and persistent pattern of behavior in which the basic rights of others or major age-appropriate societal norms or rules are violated" (American Psychiatric Association, 2000, p. 93). Some studies indicate a range of two to more than 10% of the general children population fit within this classification (Lahey, Miller, Gordon, & Riley, 1999; Singh et al, 2007). For students with this disorder, nearly 80% will likely meet the characteristics associated with a psychiatric disorder as adults (Kazdin, 2003; Singh et al., 2007). Because of emerging evidence

on the potential impact of meditation on self-regulation (Tang, Posner, & Rothbart, 2013) and its positive impacts on student populations and psychiatric disorders, interventions that introduce the concepts to students should be sought.

Impact on Substance Abuse. Meditation has also risen as a promising clinical application for minimizing craving and lowering the potential of relapse among individuals with Alcohol Use Disorder (AUD) (Gryczynski et al, 2018). Meditation as an intervention for individuals with Substance Use Disorder has been evaluated for several decades with evidence showing that Transcendental Meditation reduced substance use and its risk factors (Alexander, Robinson, & Rainforth, 1994; Gelderloos, Walton, Orne-Johnson, & Alexander, 1991; Gryczynski et al, 2018; Hawkins, 2003). A meta-analysis indicated that meditation has a statistically significant impact on cigarette, alcohol, and illicit drug use (Alexander et al., 1994). In a 2018 study that examined whether meditation may prevent a relapse into alcohol use post-discharge, participants who closely adhered to the meditation procedures and daily practiced showed statistically significant improvement in relapse avoidance. According to the study, "None of the closely adherent TM participants returned to heavy drinking post-discharge, compared to nearly one-third of the rest of the sample" (Gryczynski et al, 2018, p. 27).

Alcohol use is common among students with one-third of college students reporting heavy episodic drinking (Substance Abuse and Mental Health Services Administration, 2014). Research also indicated that adverse childhood experience (ACEs) which might include child abuse, neglect, or dysfunction within the home, show a significant link to problematic drinking later in life (Brett et al, 2018; Felitti et al, 1998; Mersky, Topizes, & Reynolds, 2013).

With regard to meditation, studies indicate higher levels of mindfulness are associated with decreased alcohol consumption and the consequences of such (Brett et al, 2018; Fernandez,

Wood, Stein, & Rossi, 2010; Shorey, Brasfield, Anderson, & Stewart, 2014; Smith et al, 2011). Some programs have been shown to significantly decrease cravings, heavy drinking, and drug use (Bowen et al, 2014; Brett et al, 2018; Witkiewitz & Bowen, 2011). As meditation may mediate the negative impacts of childhood adversity, its use in the public-school systems could provide significant value.

Impact on Insomnia. Extensive research has examined the value of sleep, especially in adolescents (Bootzin & Stevens, 2005; Carskadon, 1990). Outcomes that negatively impact restful sleep can have a significantly detrimental impact on adolescent development and academic progress (Bootzin & Stevens, 2005). Research indicates a link between disturbed sleep and substance abuse (Bootzin & Stevens, 2005). In a 2000 study examining adolescents entering substance abuse treatment, 76% of males and 88% of females shared of times when alcohol or drugs were used to help them get to sleep (Bootzin & Stevens, 2005; Stevens & Murphy, 2000). Bootzin and Stevens (2005) argue that substance use and sleep disturbance are bidirectional, with either leading to the other (p. 631). Research also shows that a substantial number of adolescents are sleep deprived (Bootzin & Stevens, 2005; Carskadon, 1990) and have very irregular sleeping schedules, creating issues related to biological circadian rhythms, including delayed sleep phase disorder (Bootzin & Stevens, 2005). This creates excessive daytime sleepiness for adolescents that often leads to academic performance issues, irritability, depression, self-medication, substance abuse, and automobile accidents (Bootzin & Stevens, 2005).

Meditation programs have been shown to reduce physiological arousal, worrying, and mind-racing, and facilitate sleep onset which, in turn, enhances daytime alertness (Bootzin & Stevens, 2005; Caldwell, Harrison, Adams, et al., 2010; Gray, Font, Unray, and Davison, 2018).

Other studies concluded that meditation programs lessened somatic distress and increased sleep quality (Bei et al., 2013; Biegel, Brown, Shapiro, & Schubert, 2009; Cheng, 2016; Malboeut-Hortubise, Sulifan, & Vadnais, 2013).

Impact on Epilepsy. Studies also indicate that cognitive and behavioral interventions that include various forms of meditation have yielded positive results for patients that include improved seizure anticipation and stress management (Leeman-Markowski & Schachter, 2017). Other benefits include diminished seizure frequency, lessened depression and anxiety, increased verbal memory, and improved quality of life (Leeman-Markowski & Schachterm 2017; Tang, Poon, & Kwan, 2015). One type of intervention based on mindfulness meditation, called, Mindfulness-Based Cognitive Therapy (MBCT) has been applied to patients with epilepsy, achieving significant results included reduced frequency, reduced depressive episodes, and improved life satisfaction (Deepak, Manchanda, & Maheswati, 1994; Leeman-Markowski & Schachter, 2017; Thompson, Patel, Selwa, Beglesy, Fraser, Johnson, et al., 2012). Further, programs based on this type of therapy include the "Using Practice and Learning to Increase Favorable Thoughts" (UPLIFT) which offers information, coping skills, relaxation methods, relapse prevention methods, and mindfulness meditation.

Meditation has also been included in Yoga programs designed for epileptics to achieve results that go beyond gains achieved exclusively (Leeman-Markowski & Schachter, 2017; Lundgren, Dahl, Yardi, &Melin, 2008). These meditation programs offer advantages that differ from medication. They are less expensive, have no known serious side effects, do not require technology, and are easily understood by patients (Leeman-Markowski & Schachter, 2017). With all of the potential advantages and the unique efficiencies offered by meditation, adding it into a school day can be of great value to the 1.2% of students who have epilepsy (CDC.gov).

Impact on Esophageal Atresia. Studies indicate that children who have undergone complex medical events show an increased risk for emotional and/or behavioral issues compared to their age group in the general population (Andreotti, Antoine, Hanati, Michaud, & Gottrand, 2017; Bouman, Koot, & Hazelbrook, 1999). Further, children with physical impairments often describe themselves as depressed and worthless and feel negative about their physical appearance (Andreotti, et al., 2018; Bouman et al, 1999).

Esophageal Atresia is but on example of an issue that potentially yields negative emotional impact on a student. According to a recent study, 35% of children who received surgery for esophageal atresia showed more behavior-related issues than those in the general population (Andreotti et al, 2017). With the physical issues that these students face, psychological issues are often present among these students and families (Caplan, 2013).

Meditation programs have yielded decreases in anxiety, depression, rumination, intrusive thoughts, and suicidal ideations, and positive benefits like increased social and emotional stabilities and increased quality of life. In the same recent study, young patients with Esophageal atresia were presented with a meditation intervention program that led to positive results in the categories of negative and positive affect, anxiety and depression as well as decreased rumination; all indicating a positive impact on these more vulnerable students (Andreotti et al, 2017). Just as students with this condition responded positively to the intervention, students with similar impairments and traumatic medical procedures may benefit as well.

Impact on Pain Management. Chronic pain in adolescents and children is perhaps more pervasive than one might think as studies report that over 25% of school-age children report chronic or recurring pain (Kashikar-Zuck, Zafar, Barnett, et al., 2013; Perquin, Hazebroek-Kamp, Schreur, Hunfeld, et al., 2000). Results also suggest that young people who

experience chronic or recurring pain have lower overall functioning as compared to healthy groups (Kashikar-Zuck et al., 2013). Further, a classification called functional somatic syndrome amounts to at least 13% of primary care visits and include such conditions as chronic fatigue syndrome, irritable bowel syndrome, juvenile fibromyalgia, chronic unexplained pain, and chronic lyme disease (Ali, Weiss, Dutton, et al., 2017; Moulin, Akre, Rodondi, & Suris, 2015). Along with the associated impacts of these conditions, patients are also diagnosed with psychiatric comorbidities that include anxiety and depression (Ali et al., 2017).

For patients with juvenile fibromyalgia, 85% go on to have adult fibromyalgia (Ali et al., 2017) and it is estimated that two to six percent of school-age children have juvenile fibromyalgia symptoms (Kashikar-Zuck et al., 2016). With regard to medications for this condition, parents are often concerned with medicating adolescents because of known side effects that may include suicidal ideation and drowsiness which, in turn, affect academic and social performance (Kashikas-Zuck et al., 2016).

Meditation programs, including the mindfulness-based stress reduction program (MBSR) have been shown to be feasible interventions in adolescents with evidence of improvements in symptom impact, anxiety, and improvements in functional disability (Ali et al., 2017). In adult studies of patients of medical conditions and meditation impacts, results like reductions in anxiety, depression, chronic pain, and systemic inflammation have been found. Also, neuro-imaging has shown that meditation positively impacts neuroplastic changes in brain regions connected to emotion regulation, attention, and self-awareness (Ali et al., 2017).

In 2012, a study of the impact of a meditation program designed to impact stress, pain management, and personal development, revealed significant reductions in six dimensions: impairment of working ability, pain, tiredness, morning tiredness, stiffness, and anxiety, with

additional borderline-significant impacts achieved in the dimension of depression (Rasmussen, Mikkelsen, Haugen, Pripp, Fields, & Forre, 2012). Other studies with specific regard to the transcendental meditation method showed decreased pain perception (Orne-Johnson et al., 2006), decreased need for medical services (Herron & Hillis, 2000; Orne-Johnson et al., 2006), and decreases in depression (Nidich, Rainforth, Haaga, Hagelin, Salerno, Travis, Tanner, Gaylord-King, Groswald, & Schneider, 2009). These studies suggest the value of meditation programs in treating functional somatic syndromes and provide further significance for inclusion in educational settings.

Impact on Eating Disorders. Various forms of meditation have yielded successful results with individuals diagnosed with eating disorders (Beccia, Dunlap, Hanes, Courneene, & Zwickey, 2018; Dalen, Brody, Staples, & Sedillo, 2015; Salvo, Kristella, Marin, Sanudo, Laurence, Schveitzer, D'Almerida, Morillo, Gimeno, Garcia-Campayo, & DeMarzo, 2018; Sampaio, Lima, & Ladeia, 2016). Studies suggest that, among US female adolescents, one out of eight are impacted by some form of eating pathology (Beccia et al., 2018; Stice, Marti, & Rohde, 2013). Furthermore, a meta-analysis indicated a 51% effectiveness rate for programs' ability to reduce eating disorder development risks (Beccia et al., 2018; Stice, Shaw, & Martin, 2007).

An emergent approach to prevention of eating disorders is found in meditation practices (Beccia et al., 2018). Meditation has been associated with risk and protection in regard to eating pathologies (Beccia et al., 2018). Some improvements shared in eating disorder research and meditation impact include: reduction of negative affect (Goyal et al., 2014), body image concern (Butryn et al., 2013), body satisfaction (Liss & Erchull, 2015), and self-compassion and well-

being (Barnaud & Curry, 2011). All of these aspects are associated in youth as protective measures against eating disorder development (Croll, Neumark-Sztainer Story, & Ireland, 2002).

A 2018 meta-analysis of 15 studies including 2,173 participants (Beccia et al., 2018) spotlighted meditation-driven advantages including reduction in body image concern (Alberts, Thewissen, & Raes, 2012; Albertson, Neff, & Dill-Shackleford, 2015; Atkinson & Wade, 2012; Butryn et al., 2013), eating disorder symptoms (Atkinson & Wade, 2012; Mitchel, Mazzeo, Rausch, & Cooke, 2007), Bulimic symptoms reduction (Scime & Cook-Cottone, 2008), reductions in anxiety (McComb & Clopton, 2003), and increase in self-esteem (Delinsky & Wilson, 2006). Furthermore, with estimates suggesting that 30% of US youth are overweight (Dalen, Brody, Staples, & Sedillo, 2015), and the potential this condition causes for the development of Type Two Diabetes, mellitus, heart disease, and premature death (Dalen et al., 2015; Freedman, Khan, Dietz, 2001), interventions that include meditation have shown significant promise in addressing key psychosocial variables with treatment (Dalen et al., 2015; Sampaio et al., 2016).

Impact on Suicidal Ideation. A significant amount of research has been done exploring the impact of different methods and programs of meditation on suicidal ideation. Mindfulness meditation studies using the mindfulness-based stress reduction (MBSR) program showed diminished suicidal ideation in veterans (Serpa, Taylor, & Tilisch, 2014). In a recent study of college females, meditation methods were found to moderate the effect of depression on suicidal ideation (Anastasiades, Kapoor, & Wooten, 2017). Furthermore, impacts of meditation on stress levels have been explored as a potential for decreasing suicidal ideation (Zeng, Ma, & Li, 2017). In another recent study, patients with a history of suicidal ideation and depression were trained with mindful meditation and the results after training suggest that meditation can weaken the

association between depression and suicidal ideation (Barnhofer, Crane, Brennen, Duggan, Crane, Eames, Radford, Silverton, Fennel, & Williams, 2015).

Suicide accounted for approximately 13% of deaths of young people between the ages of 15 and 24, and is the third leading cause of death among youth (Khurana & Romer, 2012). With the advantages and the potential for mediating the effects of depression on suicidal ideation, adding programs into school systems with a track record of success is something that should be carefully considered.

How a mindfulness meditation app may affect students in rural Virginia

According to Yoo et al., (2016), "One-third of youth attending schools in the United States meet the criteria of at least one mental health disorder…[and] two-thirds of [these] youth are not getting the help they need" (p. E-186). In a recent meta-analysis, further research was encouraged that might qualitatively examine how environments are impacted by meditation (Klingbeil et al., 2017) before meditation programs are universally implemented. Research also indicates that meditation can be an included practice in school-based Student and Emotional Learning (SEL) programs to achieve heightened personal and interpersonal results (Schoenert-Reichl et al., 2015). Studies also suggest that even though meditation programs are on the rise, their design and implementation have not been supported by qualitative research (Waters et al., 2015). This study seeks to fill that gap. Programs that reduce student stress, promote healthy brain functioning, and yield the wide variety of benefits described herein should be further investigated to qualitatively determine how successful programs achieve these results. Meditation is offered by the mindfulness meditation app because of the research that indicates its impact on stress reduction and improved well-being (Wendt et al., 2015).

The Need for In-School Programs That Address Psychological Distress

Studies abound in examining the negative impact of psychological distress on academic achievement, social functioning and day-to-day living (Bayram & Bilgel, 2008; Kutash & Schlesinger, 1980; Nidich et al., 2009; Wendt et al., 2015). This psychological distress experienced within the school environment compromises cognitive abilities, affects behavior, and impacts emotional and physical well-being (Wendt et al., 2015). Anxiety, stress and accompanying depression are growing trends with a reported 30-50% among pre-adolescent children and 25-50% of adolescents (Eslami, Rabiei, Afzali, Hamidizadeh, & Masoudi, 2016). As many as one-fifth of students show symptoms of anxiety, stress, isolation, and heightened levels of sensitivity and depression (Noble & McGrath, 2005; Prochaska, Le, Baillargeon, & Temple, 2016). Further, it is also estimated that in any given year, one-fifth of U.S. students reach a level classified as mental disorder (Prochaska et al., 2016).

Research also shows that it is imperative that these issues be dealt with during adolescence. Studies show that adolescents with depression have an increased risk of developing major depression, anxiety disorders, substance abuse, social impairment, suicidal tendencies, and underaged parenting (Ferguson & Woodward, 2002; Prochaska et al., 2016). According to the National Health and Nutrition Examination Survey, of students who experience mental health problems during adolescence, only 50.6% received any treatment the year prior (Prochaska et al. 2016).

Research also suggests that meditation interventions among young people can be effective interventions against physiologic, psychosocial, and behavioral conditions (Williams-Orlando, 2013). Further, of the interventions currently offered in an after-school and during-school format, some studies suggest that programs integrated directly into the students' school day yield heightened advantages over the after-school counterpart. For example, it is more cost-

effective to conduct the program during the school day as additional resources needed for after-school implementation may not be available (Britton et al., 2014). Additionally, students with jobs or extra-curricular activities may not be available for after-school programs. Also, any potential stigma that may be present for students seeking this type of mechanism can be avoided when offered to all (Britton et al., 2014). Waters et al., (2015) suggests that schools need reliable qualitative data before wide-scale programs should be implemented (p. 103).

According to Wendt et al., 2015,

> A program with the ability to significantly reduce stress and promote healthy brain functioning has important relevance to education, both as a means to achieve schools' primary aim of promoting learning and schools' more general aim of promoting healthy human development (p. 313).

Summary

This chapter presented a review of the theory of emotional intelligence which was officially introduced by researchers Salovey and Mayer (1990) who defined emotional intelligence as "the subset of social intelligence that involves the ability to monitor one's own and other's feelings and emotions, to discriminate among them and to use this information to guide one's thinking and action" (p. 189). In Goleman's (1995) seminal work, he shared the advantages of increased emotional intelligence that include: "a connection between emotional competencies and pro-social behavior. . . [that may be] an answer to violence plaguing our schools" (p. 89). Other advantages of heightened emotional intelligence include improved cognitive potential and abilities within a growing myriad of applications (Fallon et al., 2014). Multiple studies have been conducted exploring emotional intelligence and its relationship to

everything from alcohol dependence (Mohagheghi, Shahrokh, Rizi, & Safikhanlou, 2015) to its impact on leadership abilities (Doe, Ndinguri, & Phipps, 2015).

The chapter then discussed literature on the relationship between meditation and emotional intelligence. A recent meta-analysis conducted by Klingbeil et al. (2017), indicated that meditation-based interventions can be conceptualized as a social-emotional learning tool. Recent research on meditation also indicated a link to well-being and lower anxiety (Wendt et al., 2015), academic achievement (Afalobi et al., 2009; Waters et al., 2015), emotional resilience and coping strategies (Jung et al., 2016). The chapter then discussed quantitative research specific to school-based meditation programs that can yield increases in psychological well-being, higher resilience, and lower anxiety among the participants (Wendt et al., 2015). Lastly, the chapter reviewed research on various diverse meditation impacts and the need for in-school programs that directly address student stress and anxiety for their negative impact on student achievement and overall well-being. A gap in the literature was the insufficient qualitative data providing an in-depth exploration of how a mindfulness meditation app affects students in rural Virginia. No known qualitative case study on how a mindfulness meditation app affects students in rural Virginia was found.

CHAPTER THREE: METHODS

Overview

The purpose of this qualitative instrumental case study was to explore how a mindfulness meditation app affects students in rural Virginia. This chapter presents and validates the design choice for this study, reintroduces the overarching research questions, describes the site and participants of the study, the procedures, researcher's role, data collection methods, and analysis procedures. It closes with an address of the study's trustworthiness, ethical considerations, and chapter summary. The methods described herein follow alongside recommendations largely provided by Creswell (2018) and Yin (2014).

Design

This study utilized a qualitative instrumental case study as its design. There are several reasons for using a qualitative method for this study. The qualitative approach allowed the researcher to explore how a mindfulness meditation app affects students in this region, took into consideration the context of the area, and also addressed the gap that was insufficient qualitative data (Klingbeil et al., 2017). The setting is an instrumental case where all data was collected in relation to the *Calm* mindfulness meditation app from one region, and contextual features were considered to be influential to participant response (Creswell, 2018). Multiple perspectives were gathered from participants by use of open-ended inquiries. Multiple data collection methods were necessary, including picture making, journaling, focus groups, interviews, observations, and field notes. The researcher was the key instrument and he used inductive logic to create themes and deductive logic to evaluate against the data (Creswell, 2018). A holistic, emergent approach was used (Hughes & McDonagh, 2015; Wolcott, 2010) that remained flexible per the data collected. Lastly, reflexivity was done with researcher information shared ahead of time,

including what prompted researcher interest, to whom a researcher may report, and any personal gain achieved (Wolcott, 2010).

The design was instrumental case study for several reasons including the unusually heightened adoption and results achieved by the *Calm* mindfulness meditation app. Yin (2014) described conditions that favor the use of case study design: When "how" or "why" questions are posed, and when the observable phenomenon takes place within the context of the participants. Yin (2014) defines a case study as a practical and in-depth examination of a case within a real-world context. The origins of case study research are often attributed to studies conducted in anthropology and social science in the early twentieth century when studies of individuals and cultures were done using the design (Harrison, Birks, Franklin, & Mills, 2017). This particular app was selected because of its nationally-recognized response in both behavioral and academic areas and the fact that educators attribute the *Calm* mindfulness meditation app for part of this cultural shift.

Case studies often come under scrutiny and four common "prejudices" are shared in the literature: lack of rigor, lack of generalization, long duration of time necessary, and that case studies are glorified experiments (Yin, 2014). To acknowledge these issues, this case study incorporated multiple methods of data collection as well as triangulation which increase a study's credibility (Yin, 2014). Because of the nature of qualitative research, generalizations were analytic as opposed to the quantitative statistical generalizations (Yin, 2014). The duration of the study was not long and yielded qualitative insight by way of themes and descriptions of behavioral and academic result. Yin (2014) defines research design as "the logical sequence that connects the empirical data to a study's initial research questions and…conclusions" (p. 26). An aspect that deems a case study design to be appropriate to this study is that the *Calm* mindfulness

app is unique and this study is bounded by time and location that allows for examination of the meditation app (Yin, 2014). Case themes surfaced per data collected from the multiple qualitative forms used: picture making, journaling, focus groups, interviews, observations, and field notes. Assertions were arrived upon by the researcher (Creswell, 2018; Yin, 2009).

The focus of the study was on the case itself for its unique status; as such, the instrumental approach was most appropriate (Creswell, 2018; Stake, 1995). In defining case study research, Yin (2014) included the overall scope and attention to context and logic, data collection, data analysis, and its basis on theoretical propositions (p. 18). Each of these four aspects were apparent in this study. Four additional applications for case study usage include an explanation of causal links to interventions, description of intervention and context, description of topics, and an enlightenment of situations in which the treatment has "no clear, single set of outcomes" (Yin, 2014, p. 20). These four applications were found in this study as a description of both the mindfulness meditation app and the region in which it operates, topics related to its practice are explored, and situations with multiple outcomes were explored. As such, the instrumental case study design was most appropriate for this research. Four problems are defined in case study literature that should be addressed in any study: questions to examine, relevant data, data to be collected, and how analysis of data should be conducted (Yin, 2014). The following reflects these issues.

Research Questions

CQ: How does a mindfulness meditation app affect students in rural Virginia?

SQ1: How does a mindfulness meditation app affect students in rural Virginia academically?

SQ2: How does a mindfulness meditation app affect students in rural Virginia socially?

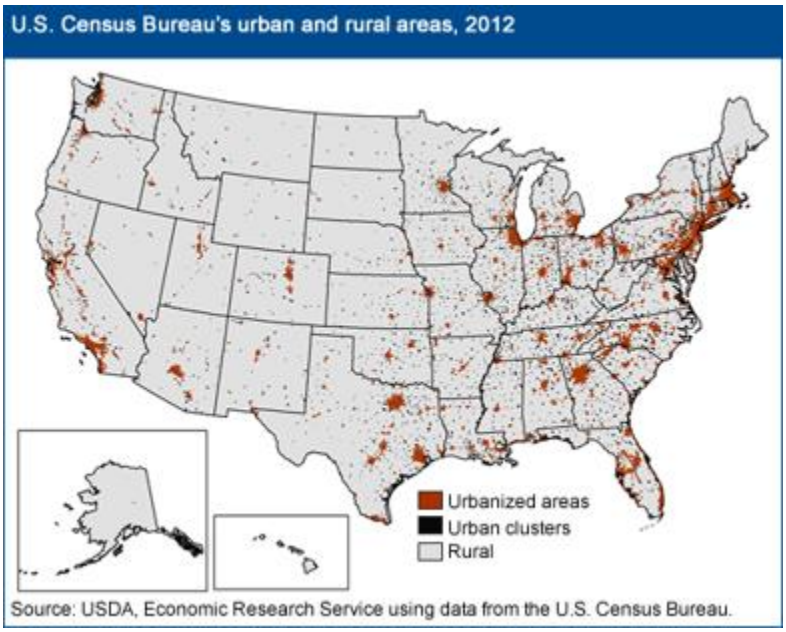
SQ3: How does a mindfulness meditation app affect students in rural Virginia behaviorally?

Setting

The setting for this study was rural Virginia and included students in area high school and college education. A careful process of screening potential cases was done to ensure applicability, diverse representation, and optimal data collection (Yin, 2014). This area was selected because of the dearth in research on the rural response as well as a need for student perspective on a mindfulness meditation app implementation. Merriam Webster defines rural as: of or relating to the country, country people or life, or agriculture. According to the United States Department of Agriculture and the US Census Bureau's Urban and Rural Areas map, much of southwestern Virginia is designated as rural. As such, this study focused on participant selection from this region.

Figure 3.1

U.S. Census Bureau's Urban and Rural Areas (United States Department of Agriculture, 2012).



Other schools have incorporated the program with mixed results; however, no known study examining student perspective in rural Virginia exists. The region consists of mostly white students. This study attempted to garner a diverse sampling; however, in terms of race, the participant pool was all white. According to recent research, controlled quantitative studies of meditation programs among students have indicated decreases in depression and emotional symptoms, anger, fatigue, anxiety, mood disturbance, and lowered means for student suspensions (Center for Wellness and Achievement in Education (CWAE), 2014). A California study indicated increases in attendance, sleep quality, and resilience as well as increases in academic domains for California Standards Test (CST) and English Language Arts (ELA) (Center for Wellness & Achievement in Education, 2014; Wendt et al., 2015). The results of the *Calm* mindfulness meditation app have been recognized in national media. This setting, and the student perspective in general, had not been examined in research.

The *Calm* mindfulness meditation app consists of a smart-phone driven app used as often as desired that contains meditations ranging from two-minute sessions to longer 12-minute sessions and more. As a form of mindfulness meditation, the *Calm* meditation app is practiced by both students and teachers who focus on the breath while sitting with eyes closed. The ultimate goal is to appreciate the breath at finer levels until that focus disappears as self-awareness becomes primary (Faber, et al., 2017). Meditation programs have shown improved response among several pertinent academic and behavioral measures (Wendt et al., 2015).

Participants

This case study made use of purposive criterion sampling to ensure participants agreed to daily involvement in the meditation app as well as snowball sampling to potentially identify additional information-rich participants (Creswell, 2018). The participant pool consisted of

students aged 18 or older who were voluntarily introduced and engaged in the *Calm* mindfulness meditation app at-least once daily for two weeks. For selection criteria, the participants were 18 years of age or older, currently enrolled as a high school senior or college student, must have owned a smartphone that could sustain the *Calm* app, and must have signed consent forms agreeing to participate in the *Calm* mindfulness meditation app daily for two weeks and the data collection methods that follow.

While quantitative studies include large sample sizes in order to achieve generalizability, qualitative studies often use purposive sampling of smaller numbers with rich data to share. Qualitative research is based more on the richness of cases and the capabilities of the researcher in observing and analyzing the case than with sample size (Patton, 2002). The sample size in this study was 12 adult students. Marshall, Cardon, Poddar, and Fontenot (2013), conducted research to examine the appropriateness of sample sizes in qualitative studies and shared ranges for the number of participants in single-case case study research. Their research validates this study's approximate participant level and that this number falls within the recommended participation level for this research type (Marshall et al., p. 21). Additionally, if snowball sampling were to reveal additional candidates rich with information, that number could have increased; however, a range of 12-15 was sought to ensure ample focused qualitative inquiry and to avoid surpassing the point of data saturation.

Procedures

IRB approval was achieved prior to any data collection. A pilot study was conducted per recommendations of Yin (2014) via convenience sampling. No data from that experience was used in the study's analysis. Online advertisements in local forums, social media, Facebook groups and the like were used as well as flyers distributed throughout the author's general area

and on announcement boards in local colleges and universities (See appendix B). Once initial collection of potential participants was achieved, permission was obtained in writing by each participant and each was provided with a letter describing the intent and procedures of the study, the potential benefits to society, and the specific reasons for this setting selection (See appendix E).

The criteria for participation in the study included an agreement to daily participate in the *Calm* mindfulness meditation app for a period of at least two weeks. Written consent was also obtained from each participant (See appendix E). The study sought to collect data from 14 participants; however, once consent forms were collected, and at least a total number of five participants were ready to begin, that smaller group was asked to fill out a questionnaire (for demographic purposes only), to download the mindfulness app, *Calm*, and to be introduced to the meditation app so they could begin their two-week period of engagement. Participants were shown the location, on the homepage of the app, that provided the official *Calm* daily meditation. This meditation was approximately ten minutes in length. Participants were encouraged to further explore the app and its additional offerings; however, the only required participation for this study was the daily engagement with the featured meditation. All communication with participants was conducted via online/video chat in accordance with 2020 Covid-19 social distancing recommendations. Once the two-week period was complete, data collection took place in two phases.

Phase one consisted of data collection methods including multiple document analyses, (an art project, a writing example by way of journal prompt, and the selection of a meme/gif and focus-group discussions provided and described later in this chapter) (See appendices G-I). During the art project, participants drew a picture to represent their perspective on meditation

and emailed this artwork to the researcher (see appendix I). With the journal response, participants described their mental/physical state before and after a typical meditation and shared any differences observed (see appendix J). The last part of document analysis included the gif/meme selection where participants searched the internet for a gif/meme that might express their thoughts/feelings on meditation and its impact (see appendix I). The last part of phase one was the focus group comprised of five or more students. During this, participants responded to small group discussion questions (see appendix K). Research to support each of the three document analysis methods above includes that of Bosacki, Marini, and Dane (2006), Clayton and Thorne (2000), and Gong et al. (2012). Focus group data collection is supported by Creswell (2018), Krueger and Casey (2015), and Yin (2014).

Phase two consisted of the personal interviews and was scheduled at the participant's convenience. Interviews were recorded, transcribed, and analyzed by open coding using NVivo with permission achieved prior via the consent form(s). Participants were given the opportunity to verify information shared before publication to ensure their perspective was accurately represented. Pseudonyms were used and the interviews were expected to last approximately 45 minutes (see appendix L). Verification was done with a consultant, after which analysis of themes took place. In response to Covid-19 requirements for social distancing, all interviews and focus-group discussions occured over video chat. Research to support the use of personal interviews as a valid form of qualitative data collection include: Congdon, Novak, and Goldin-Meadow (2018), Creswell (2018), Hancock and Algozzine (2009), and Yin (2014).

All information collected was stored in a locked file container and any information stored digitally on that computer is password protected. A pilot study was conducted with young adults local to the researcher who have used this or a similar meditation program. The pilot study

included all data collection methods; however, no members or data from the pilot study conducted in southwest Virginia were included in the official study. Consideration and steps were taken by the researcher for any issues or recommendations that surfaced as a result of the pilot.

Collection of Demographic Information

This brief questionnaire was used to collect demographic information that could have proven useful in grouping final results. The demographics selected for this purpose were as follows: contact information (email/mobile), gender identification, age, grade level, race, ethnicity, and any known medical conditions. All information collected on the questionnaire was voluntary. With regard to the question on known medical conditions, it was because of the research shared in chapter two that highlights potential effects of meditation on both physiological and psychological prognoses that may surface during interview and other data collection methods (See appendix H). The questionnaire was distributed immediately following my introduction, explanation of the study's purpose to the participants, and introduction to the mindfulness meditation app, *Calm*. Participants were then asked to begin their 2-week period of daily meditation by using, at least, the daily recommended meditation provided on the home screen of the app. Participants could explore the app further, if they chose to; however, the daily featured meditation is all that was required for the study. Their responses were submitted by email and stored securely.

Art Project

After the two-week period of app participation, participants met in small groups for phase one which included data collection and focus group discussion. Participants were first asked to draw, scan, and email a picture that might represent the impact meditation had or did not have on

them. The artwork was digitally recorded and stored securely and participants were allowed to keep their originals if they so chose. The consent form included a clause that gave students/parents the opportunity to deny or approve potential inclusion of the artwork in the published study.

Journal Prompt

Once the art project was complete, participants were asked to journal their mental state both before and after a meditation and email the reflection to the researcher. Additionally, any observations they may have had on social, academic, or behavioral impact could be shared. These impacts might have been experienced in self or noticed in others. Participants were asked to do this prior to their interview. A template for this part of phase one was provided. Participants responded via email to share these thoughts (See appendix J).

Gif/Meme Collection. Much like the art project, this method allowed participants to visually express representation of their thoughts on meditation-impact by way of existent displays found in media. As part of their journaling, participants were asked to include a gif or meme that they relate to as they consider their meditation practice. Participants were provided a secure email address to send their gif/meme selection. Selections were digitally recorded, labeled, securely stored, and deleted from the email account (See appendix J).

Focus Group

The focus group took place immediately following the collection of art, journaling, and gif/meme selection, the brief discussion of journaling and gif/meme selection, and it closed out that day's activities. Focus groups were video-recorded and transcribed for theme development. Questions are included later in this chapter and a lesson plan for the session can be found in appendix K. The questions forged a discussion of effects of meditation on the academic,

behavioral, and social aspects for these students and were directly connected to the four components of Goleman's competency model: self-awareness, self-management, social awareness, and relationship management. Methodology for the focus group followed recommendations by Creswell (2018) and Yin (2014) and the minimum number of participants sought was five. According to Krueger and Casey (2015), "The ideal size of a focus group for most noncommercial topics is five to eight participants" (p. 67). It is also argued that a researcher should not plan focus groups with 10 or more participants because of the difficulty in controlling and limiting participant opportunities to share (Kruger & Casey, 2015).

The focus group was used for exploratory purposes. It also provided an opportunity to create synergism, enthusiasm, and can snowball discussion points (Creswell, 2018). Focus groups are advantageous as they often elicit interaction between participants that can yield significant data, especially for participants more comfortable in a group setting versus an individual interview (Creswell, 2018). This data-collection method is often used in qualitative research and can lead to gains in in-depth understanding of social issues (Nyumba, Wilson, Derrick, & Mukherjee, 2018).

Interviews

Individual interviews were scheduled at the participant's convenience. Before the video chat interview began, the researcher reminded each participant that all responses would be confidential and that a pseudonym would be used for both the school and each participant. Participants had an opportunity to verify information before publication to ensure their perspective had been accurately represented. Effort was made to find a secure and comfortable location and time for the interview. The individual interviews were video-recorded to ensure complete responses, including physical gestures, expressions, or long pauses which could also be

coded and included in theme development (Congdon, Novak, & Goldin-Meadow, 2018). The researcher scheduled interviews so that there was a one-hour block for the interview, and, if multiple interviews were conducted in one day, fifteen minutes of time in between interviews to allow the researcher to record any initial hunches, questions, or insights while the interview was fresh in mind. The questions described in detail later in this chapter are presented in the order they were asked. The researcher conducted a pilot study to examine whether there was potential need for adjusting this schedule and procedure. Interview questions are also found in appendix L.

The Researcher's Role

I served as the primary instrument for this qualitative case. In quantitative studies, a researcher will often use a specific instrument to measure participant response. In qualitative research, the researcher is the primary instrument (Brisola & Cury, 2016). I kept a reflective journal throughout and constantly invited feedback from all participants in the form of member checks. In this publication, I clearly shared my background as a meditator of 12 years with no formal training except books and videos on the subject. I am interested in the environmental impact on learning; both external and internal and have a strong interest in emotional intelligence, cognitive development, and the role meditation may play in this. By using multiple methods to obtain trustworthiness, it was my hope that any researcher-bias was somewhat mitigated. I sought to learn how meditation affects students in this rural area by way of their responses alone. My assumption was that students would indicate meditation had a positive impact on their lives, both personally and interpersonally, and that their responses would illuminate how this happened.

Data Collection

The primary data collection methods used in this study were document analysis (art project, journals, and meme/gif selection), focus groups, and interviews (Yin, 2014). Before data collection began, there were discovered suggestions in the case study literature that included the development of a protocol, screening of potential cases, and a pilot study (Yin, 2014). As such, a pilot study was conducted by the researcher in his hometown. Pilot studies can be conducted for reasons unrelated to the criteria used for the eventual case study (Yin, 2014). For example, in this pilot study, students were selected who daily meditate; however, they did not come from a pool of participants who had yet to be introduced to the *Calm* mindfulness meditation app. Pilot studies can still be quite valuable and can be largely based on convenience sampling and serve as a more formative base of understanding. No data from the pilot study was used in the case study results. Students in the pilot study were identified as having adopted meditation as a daily practice and afforded all aspects of the data collection plan proposed in this study. Though none of the data was used in the official case study, the pilot study yielded valuable information that was used to inform the case study procedures and achieve more-efficient results. Lastly, the pilot study revealed information about relevant field questions and yielded ideas to improve the general logistics of the field inquiry (Yin, 2014).

Researcher abilities deemed necessary during data collection included asking good questions, listening effectively, being flexible and unbiased, and understanding the issues within the study (Yin, 2014). These methods and practices, addressed prior, yielded a more effective data collection phase in the research. Data was collected by various types in order to achieve reliability (Yin, 2014). Six types of evidence and techniques are described in case study literature: documentation, archival records, interviews, direct observation, participant-

observation, and physical artifacts (Yin, 2014). In this case study, the three primary data types used were document analysis, focus groups, and interviews. Additionally, Yin (2014) shares three important principles that should be applied to all data types. These principles help to ensure reliability and validity and include: multiple source use, creation of database, and maintenance of the chain of evidence (Yin, 2014). To maintain chain of evidence, observational notes and a reflective journal were used by the researcher. Field notes were taken soon after each data collection event. These notes were divided into two categories: Descriptive and Reflective (Creswell, 2018). Carefully taken notes assisted in categorical aggregation which was useful in establishing themes and patterns for analysis (Creswell, 2018) (See Appendix M for Field Notes template).

Triangulation is an integral part of establishing the validity of a study and requires the use of multiple sources of data that present common themes (Yin, 2014). The use of multiple sources of evidence leads to a convergence of specific lines of inquiry which creates this triangulation and the multiple inputs serve as corroborators for one another (Yin, 2014). Triangulation is a valuable tool for case study researchers and provides an excellent source of construct validity for the case (Yin, 2014). In this study, the three primary methods of data collection, document analysis (art project, journal, and meme/gif selection), focus groups, and interviews formed the three methods for triangulation of data.

Data collection in multiple forms began in phase one with a written questionnaire (for identification purposes only), participant art piece, journaling to prompts, and a meme/gif selection (Yin, 2014). The second part of phase one was when focus groups convened. Phase two was the individual interviews which began the following week, after a period of review for

the purpose of interpreting and highlighting the need for additional insight, and tweaking or adding open-ended questions.

Reliability was achieved via the multiple data collection methods, including document analysis (art project, journal prompts, and meme/gig selection), focus groups, and interviews. (Yin, 2014). By using observational notes and a reflective journal, the researcher organized both descriptive and reflective notes in separate columns. Any hunches, questions, or insights achieved by the researcher were recorded immediately following events. Observations included the recording of any physical gestures or expressions made by participants during data collection. The questions explored in this study were posited in relationship to the four components of the theoretical framework of Goleman's Emotional Intelligence: Self-awareness, self-management, social awareness, and social management (Abdolrezapour, 2017; Greenockle, 2010) and their relationship to this framework is detailed later in this chapter.

The sequence for the three data collection types is as follows: Document analysis (which consists of an art project, journal prompts, and a memes/gif selection), focus groups, and interviews. The document analysis and examining focus groups took place during phase one of the study. Conducting the document analysis and focus group responses allowed for identification of potential avenues for follow-up during interviews which took place during phase two the following week. Additionally, researcher observations were recorded throughout the entire process. Phase two consisted of personal interviews that expanded on themes presented during week one and further explored the case study questions.

Document Analysis

Documents analyzed in this research study included the art project, journal, and meme/gif selection. Responses to the art project, journal, and meme/gif selection were obtained during

phase one to secure data and enhanced additional discussion during the interview process. Analysis details for each will follow.

Art project. The art project included the opportunity for participants to describe aspects of meditation-impact by way of art; both offering a unique data collection method and an opportunity for visual students to share potential data within their preferred learning mode. The art project served as a tool for furthering discussion during the interview portion of their participation. According to Bosacki, Marini, & Dane (2006), such opportunities for expression can yield qualitative data that may not have surfaced with other methods. Artwork was digitally recorded for analysis and inclusion in study results. See appendix I for the lesson plan for this section. Because of the obvious subjective nature of art interpretation, verification of inferences was explored in the interview process. Insights gleaned from the image prompted more opportunity during interviews to explore by collecting the artist's interpretation of what they drew. The following interview question was designed to achieve this objective: "The image you produced, can you expand on your feelings when you were drawing this?"

Journal and Gif/Meme Selection. Participants responded to journal prompts where they actively described their mental state both before and after a typical meditation session. These individual prompts fostered an attention to any immediate gains achieved from the meditation. According to Clayton and Thorne (2000), the use of journals or diaries is a valid tool for qualitative evaluation. These written accounts have also been used to frame potential interview questions (Filep, Turner, Eidse, Thompson-Fawcett, & Fitzsimmons, 2018; Gray & Smith, 1999). The gif/meme exercise was an opportunity for participants to find existent displays in media that they felt represented their thoughts on meditation. These art-associated documents have been shown to elicit valuable data that may not have surfaced otherwise (Bosacki, Marini,

& Dane, 2006; Gong et al., 2012). This allows the visual learner a second opportunity to share within their preferred medium of learning but also allows students not proficient in drawing or painting to express themselves visually. Opportunities for artful expression often forge a great kickstart to conversation during the interview process and have been shown to elicit qualitative data that is supplemental to that found in other data collection methods (Bosacki, Marini, & Dane, 2006; Gong et al., 2012).

In order to maintain a strong chain of data collection, researcher field notes were taken at the conclusion of each meeting with participants. The researcher also kept a reflections journal as a source of potential data. The open structure to art projects and meme/gif selection yielded fresh new perspectives on the topic. All of these documents were analyzed for coding and theme analysis (Creswell, 2018).

According to Yin (2014), "The most important use of documents is to corroborate and augment evidence from other sources" (p. 103). As such, by way of triangulation, the data obtained from document analysis was used to corroborate or contradict data achieved during focus groups and interviews. Should a contradiction have then occured, the researcher could pursue the problem more deeply.

Focus Groups

The second part of phase one was to explore, by way of focus groups, open-ended themes found in the research review and explore any focus areas that may have been presented during document creation. The focus group was used to confirm early data and for exploratory purposes. It also provided an opportunity to create synergism, enthusiasm, and snowballed discussion points (Creswell, 2018). Focus groups are advantageous as they often elicit interaction between participants that can yield significant data, especially for participants more

comfortable in a group setting versus an individual interview (Creswell, 2018). The focus groups were video and audio recorded and designed to allow for, and encourage, response from all participants. The focus group occured prior to individual interviews to allow for potential expansion and verification of comments shared. These questions were presented to a dissertation committee for review and were also included in the pilot study in order to ensure clarity of focus group questions and to adjust if needed for richer response. These researcher-created questions, like those presented in the interview process, align with the four components of Goleman's emotional intelligence competency model. As shared earlier, the components include self-awareness, self-management, social awareness, and social management (Abdolrezapour, 2017; Bipath, 2008; Greenockle, 2010).

1) Describe any changes in your level of compassion or understanding for your peers as a result of your involvement in the *Calm* mindfulness meditation app?
2) How has the *Calm* mindfulness meditation app helped you in developing leadership skills?
3) Since you became involved with the *Calm* mindfulness meditation app, what changes, if any, have you noticed regarding leadership?
4) Since participating in the *Calm* mindfulness meditation app, what changes, if any, have you noticed in your listening skills?
5) How has the *Calm* mindfulness meditation app helped you in bonding with others?
6) How has the *Calm* mindfulness meditation app fostered teamwork and collaboration for you among your peers?
7) In what ways has the *Calm* mindfulness meditation app affected your self-control and the way you manage disruptive emotions?

8) How has the *Calm* mindfulness meditation app affected your self-confidence and/or the self-confidence of your peers?

Question one dealt primarily with social awareness, which is one of the four components of Goleman's emotional intelligence competency model. Specifically, this question elicited data pertaining to empathy as a facet of social awareness. Questions two through six directly related to the fourth dimension of Goleman's emotional intelligence competency model: Social skills. These questions elicited responses connected to leadership, social bonding, and collaboration. Question seven was connected to the second component of Goleman's emotional intelligence competency model: Self-management; specifically, the aspects of conscientiousness, self-control, and adaptability. Question eight related to the first component of Goleman's emotional intelligence competency model: Self-awareness. This elicited responses specific to self-confidence, accurate self-assessment, and the participant's recognition of their own emotions and the effects of them (Goleman, 1995; Parish, 2015). Additionally, questions one through six directly related to research question two of this study: How does a mindfulness meditation app affect students in rural Virginia? Questions seven and eight pertained to research questions one and three which examined the academic and behavioral ramifications of the program.

Interviews

The primary method of data collection was semi-structured interviews with each participant. Interview questions were open-ended and fluid to allow participants to add their perspective to each prompt (Hancock & Algozzine, 2009; Yin, 2014). With interviews, Yin (2014) urges that questions satisfy the needs of the study and are friendly and open-ended. Interview questions wee semi-structured yet allow for open-ended response. Questions were open-ended and orchestrated to allow for rich response from each participant. These responses

formed the most substantive data collection method. The questions were posited in relationship to each of Goleman's four components of Emotional Intelligence: Self-awareness, self-management, social awareness, and social management (Abdolrezapour, 2017; Bipath, 2008; Greenockle, 2010).

Both descriptive and reflective notes were taken by the researcher. Hunches, questions, or insights achieved were recorded immediately following events so that the notes were fresh and no data was lost by delay. Observations included the recording in researcher notes of any physical gestures or expressions, including long pauses, made by participants during data collection as these often serve as telling indications which can be coded and included in theme development (Congdon, Novak, & Goldin-Meadow, 2018). The researcher was engaged in these points with participants as a "complete participant" (Creswell, 2018). Prior to the interview, participants were reminded that all responses were confidential and that a pseudonym would be used for both the school and the participants. Lastly, the interviewee may also suggest other participants to interview as well as additional sources of evidence to be investigated. In this way, the interviewee becomes more than a respondent and more of an informant; an identification especially critical in case study research (Yin, 2014). The following prompts will be used:

1) Please tell me more about yourself including what you might like most people to think of when they hear your name
2) What does meditation mean to you?
3) How does meditation affect different areas of your life?
4) Describe times when you may feel the need to practice meditation more often?
5) Discuss any time you practiced meditation outside of class?

6) What changes, if any, have you noticed in your school work since you began meditating?
7) What changes, if any, have you noticed in any meditating peers' school work?
8) What changes, if any, have you noticed in your interaction with peers and teachers since you began meditating?
9) What impact, if any, do you believe meditation has on the way people behave?
10) What effect, if any, do you think meditation has on your resilience?
11) Describe some areas in your life where you feel like meditation has had an effect, good or bad?
12) Please share a story about something that happened that is connected to the meditation program.
13) Think of a teacher who has participated in a meditation or app. What changes, if any, have you noticed in them and how did these changes affect you?
14) Describe any aspects at your school that might take place if the meditation program were a part of each day?
15) As we look at the drawing you made, tell me about what thoughts and feelings you are expressing in your work.
16) As we look at your journal entries, you shared some wonderful insight. What might you add to some of these entries?
17) What caught your eye when you selected this particular gif/meme to include in your journal?
18) Why do you think this meditation app works particularly well?

19) Is there anything else you want to share about the effect meditation has had on your life?

These questions address different aspects of the study and elicited a rich response. Each question was designed, in part, to explore aspects that may illuminate whether the participant saw meditation as a holistic life experience or if it was a categorized experience only useful in certain situations. Questions two-five, eight-eleven, and 15-18 shed light on whether the participant had expanded meditation to be a sort of coping mechanism in multiple areas of life. Questions six, seven, ten, eleven, and eighteen addressed the cognitive aspects of meditation while questions one, three, eight, nine, 11-13, and 18 addressed the interpersonal relational impacts. Each of these questions also reflected the categories of interest found in Goleman's four-component emotional intelligence model and the impact of personal and interpersonal understanding and are connected to appropriate components in the following sections (Abdolrezapour, 2017; Bipath, 2008; Greenockle, 2010).

Question one served as an ice breaker that allowed the participant to open up about aspects of self that were comfortable; however, it also directly applied to Goleman's relationship management aspect with his emotional intelligence model (Abdolrezapour, 2017; Bipath, 2008). In particular, it applied to the competency of influence as found under the relationship management domain. Question two applied to both the self-awareness and self-management branches of Goleman's model and yielded responses directly applicable to each of the research questions in this study. Question three elicited whether the participant saw meditation as a holistic practice or whether it was useful in certain categories. It applied to all levels of the Goleman model. Question four and five directly related to the self-awareness aspect of the emotional intelligence model as the participant described situations that drove him or her to more

meditation; situations when they were aware of the need and value of meditation (Bipath, 2008; Greenockle, 2010). Question six directly related to sub-question one of this research; how a mindfulness meditation app affects the students academically. Questions seven through nine pertained to social awareness aspects of Goleman's emotional intelligence model (Abdolrezapour 2017; Bipath, 2008; Greenockle, 2010) as well as sub-questions two and three of this research study which looked for how the program may have had such a positive effect on the individuals socially and behaviorally. Question ten dealt specifically with the self-management aspect of Goleman's model (Abdolrezapour, 2017; Greenockle, 2010) as well as the research indicating meditation as having a significant impact on participant resilience (Wendt et al., 2015). Questions 11 and 12 yielded responses applicable to all aspects of Goleman's model and each of the research questions in this study (Abdolrezapour, 2017; Bipath, 2008; Greenockle, 2010). Question 13 applied to research suggesting that heightened emotional intelligence can create enhancements in participant's leadership abilities and seeks to explore the perception of impact the student may have experienced (Fullan, 2002; Hyatt, 2005). Question 14 attempted to investigate the potential of adding a program like this into a college daily curriculum. Questions 15 through 17 were designed in such a way as to allow the participant to both verify and expand upon aspects of meditation that may be revealed through the medium of artistic expression. This discussion yielded additional data and insight as well as serving to verify researcher analysis. Question 18 surfaced distinctions between the implementation or student-receptiveness to the *Calm* mindfulness meditation app as compared to its efficacy in other school. Question 19 served to offer participants a final opportunity to share any thoughts not covered in the previous questions.

Data Analysis

Data analysis was achieved by three strategies: theoretical proposition reliance, case description development, and examination of rival explanations (Yin, 2014). Additionally, Yin (2014) shared five techniques for analyzing case study data. Each of these techniques were used in this case study because of their unique properties and yielded rich new perspectives on the data received. These techniques included: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis.

A reliance on theoretical propositions, most notably Goleman's competency model of emotional intelligence was used with pattern matching methods to strengthen internal validity (Yin, 2009). Developing a case study description framework is a strategy that also proved effective. By doing so, data was collected with a focus on specific topics necessary for case description. The descriptive approach can sometimes help to identify potential causal links to be analyzed (Yin, 2014). Examination of rival explanations was also used, and any potentials were carefully evaluated to determine whether such an explanation could be rejected or accepted. Within this instrumental case, it is important to determine what impact, if any, other potential influencers might have had on the outcome. Giving voice to the participants in this case study helped determine why they believed the changes occurred in their lives and school culture and whether the meditation program was largely responsible or other aspects found in the context.

As data was collected, the researcher sought to find unique ways of sorting data in order to potentially ascertain new observations. Miles and Huberman (1994) shared a set of analytic manipulations that have been widely recognized for their potential in creating different perspectives for the data collected. Techniques include putting information into different arrays, categorizing information by way of a matrix, creating displays for data like flowcharts or other

graphics, tabulating event frequencies, calculating second-order numbers that include means and variances, and placing information into chronological order (Yin, 2014, p. 129).

Programs like NVivo can be used in the pursuit of data analysis; however, researchers must develop their strategies which can address all forms of data analysis techniques listed above. NVivo and programs of that nature are valuable; however, they do not replace the primary instrument in case study research: the researcher. As such, all substances of data were read through multiple times with margin notes and coding. Categorical aggregation were used to determine themes and patterns (Creswell, 2018). All data was then analyzed using NVivo, followed by coding and theme development. With regard to interviews, each participant was interviewed in open-ended, semi-structured format two times during the study. Interviews were recorded verbatim for thematic development and coding and video-taped for gesture analysis (Congdon et al., 2018). Additionally, the data was categorized by raw data, interpretation, and personal reflections (Creswell, 2018). Observational data was separated into two categories: descriptive and reflective. Any researcher hunches, questions, or insights were recorded immediately following each event. Field notes were copious. Focus groups addressed questions like, describe a situation where meditation has helped in times of stress. These responses were used for coding and theme production. Pattern matching was used to compare the resulting themes to those that surfaced by way of heightened emotional intelligence (Yin, 2008).

Additionally, logic models can be used in this case study to match empirically observed events to the responses predicted in this case (Yin, 2009). Lastly, the exploration of rival explanations was done to determine if a mindfulness meditation app is responsible for the results experienced by this student or other factors (Yin, 2009).

Trustworthiness

The overall trustworthiness of a study is addressed by way of four categories: credibility, dependability, transferability, and confirmability. Each is necessary in validating the procedures and findings. Each is necessary in validating the study in the eyes of academic readers.

Credibility

The construction of a theory(ies) that the case study develops, or tests, is essential. A researcher should be familiar with individual theories, group theories, organizational theories, and societal theories (Yin, 2014). In this case, credibility was established as the study rests within Goleman's widely-accepted framework of emotional intelligence (Abdolrezapour, 2017). Additionally, there are four categories for judging research quality: construct validity, internal validity, external validity, and reliability as well as methods to ensure quality: multiple-source use for evidence, pattern matching for internal validity, theory use for external validity, and case protocol and database for reliability (Yin, 2014). Four different types of case studies are reflected in research that include single and multiple case options with holistic or embedded units of analysis (Yin, 2014). This case study is a single holistic unit. Credibility was achieved by way of data triangulation. Triangulating data from interviews, observations, field notes, focus groups, and journaling allows increased reliability by using multiple sources and methods in corroborating findings (Lincoln & Guba, 1985; Creswell, 2018). Furthermore, prolonged engagement was used to achieve credibility. The researcher double-checked interview response intent. Additionally, consensual validation was achieved by way of approval from competent peers (Eisner, 1991; Creswell, 2018). Lastly, researcher bias/reflexivity was shared upfront.

Dependability

Dependability was achieved by way of rich, thick description (Creswell, 2018). Digital files were transcribed using good recording equipment that captured each sound and silence. Video-taping of interviews with participants also helped to ensure the dependability of any gestural data recorded (Congdon et al., 2018). The researcher also shared information pertaining to each participant and engaged in member checks to check and confirm the data and interpretation. This was done because, in some cases, participants may discover that their intent is not represented in the presentation and may wish to add or change response.

Confirmability

Confirmability was achieved by way of auditing (Creswell, 2018). Also, the technique of interpretative research was incorporated. This involved the chain of interpretations that are well documented for the reader (Creswell, 2018). Additionally, a complete documentation of checking and re-checking data and interpretations was done and audited prior to publication.

Transferability

Transferability is a natural limitation in qualitative research because it involves extending the results and conclusions that are based on a particular individual, group, or case to other settings, times, individuals, or institutions (Morse, 2015). This case was chosen for its uniqueness; therefore, generalizability will be in question. To avoid some of the issues inherent in this aspect, a rich description of the environment and its context is included and peer review of the material was done. Issues with generalizability are addressed in the concluding limitations of the study. Lastly, generalizations in case study research are differentiated in that they can be done analytically versus the statistical generalizability found in quantitative studies (Yin, 2014).

Ethical Considerations

Ethical consideration of all participants was continually monitored to ensure that each person was protected and respected, including a sensitivity to vulnerable participants, any potential imbalanced power relations, and risks (Hatch, 2002; Weis & Fine, 2000; Creswell, 2018). Permission from IRB was obtained before any data collection began. Informed consent was obtained from all participants. Also, information was shared upfront that a transcriptionist may be hired to assist with interview data. All data is secured in locked filing cabinets and password-protected computers. Site and participant pseudonyms were used on all publications.

Participation in this study was clearly described as voluntary, and, as such, it was also made clear that participants had the right to withdraw from the study at any time. Though compensation does occur in some research studies, compensation was not be offered. At all points in this study, the rights and respect of all participants were held paramount and never neglected.

Summary

This qualitative instrumental case study explores how a mindfulness meditation app affects students in rural Virginia. The chapter validates the choice of instrumental case study by way of the aspects that suitably meet criteria established in research (Creswell, 2018; Yin, 2014). Aspects discussed include an examination of an instrumental case where program-involvement is bounded within the region, includes a collection of multiple perspectives by way of holistic open-ended inquiry and various data collection methods (Creswell, 2018; Hughes & McDonagh, 2015; Wolcott, 2010). Additionally, exemplified in the study are the four aspects common to case study research: explanation of causal links to interventions, description of intervention and context, description of topics, and enlightenment of situations in which the treatment has “no

clear, single set of outcomes" (Yin, 2014, p. 20). This chapter presents the procedures used to collect the data necessary to achieve a qualitative interpretation of the program effects. Furthermore, procedures and analysis methods were presented. Collection of data was done by way of multiple documents, including an art project and journals with included gif/meme analysis, a focus group, and individual interviews. Data was analyzed by three overarching strategies: theoretical proposition reliance, case description development, and examination of rival explanations (Yin, 2014). Furthermore, five techniques were incorporated for data analysis which include: pattern matching, explanation building, time-series analysis, logic models, and cross-case synthesis (Yin, 2014). Trustworthiness and dependability were achieved through multiple means that included data triangulation, prolonged engagement, consensual validation, researcher bias and reflexivity, rich and thick description, and member checks. Confirmability was achieved by way of auditing and interpretive research (Creswell, 2018). Ethical behavior and considerations were adhered to at all times throughout and following the study. With these methods in place, this research explored the successful implementation of a mindfulness meditation app, gave voice to student participants, and yielded valuable information for educational leaders worldwide.

CHAPTER FOUR: FINDINGS

Overview

The purpose of this qualitative instrumental case study is to explore how an introduction of a mindfulness meditation app (*Calm*) affects students in rural Virginia. This chapter begins with a brief description of each of the study participants. Note that pseudonyms are used throughout the study to represent each participant anonymously. Each of the participants was a current adult resident of rural Virginia and was engaged in an educational program at the time of the study. Additionally, the chapter presents the results of the data analysis in two primary sections: "Themes developed" as represented by each of the data collection methods described in this study, and "research question responses" which provides narrative responses to each of the research questions using the data collected. The chapter concludes with a summary of the findings.

Participants

Originally, there were 14 participants who agreed to participate in this study. Two backed out just prior to the initial focus groups; therefore, this study represents the results obtained from 12 participants. Participants were made up of seven females, four males, and one student who was declared as non-binary. All participants were between the ages of 18 and 50 and were current student residents of rural Virginia. Using pseudonyms that were selected by each participant and reflecting a norm in qualitative dissertations, this section continues with a description of each of the 12 participants.

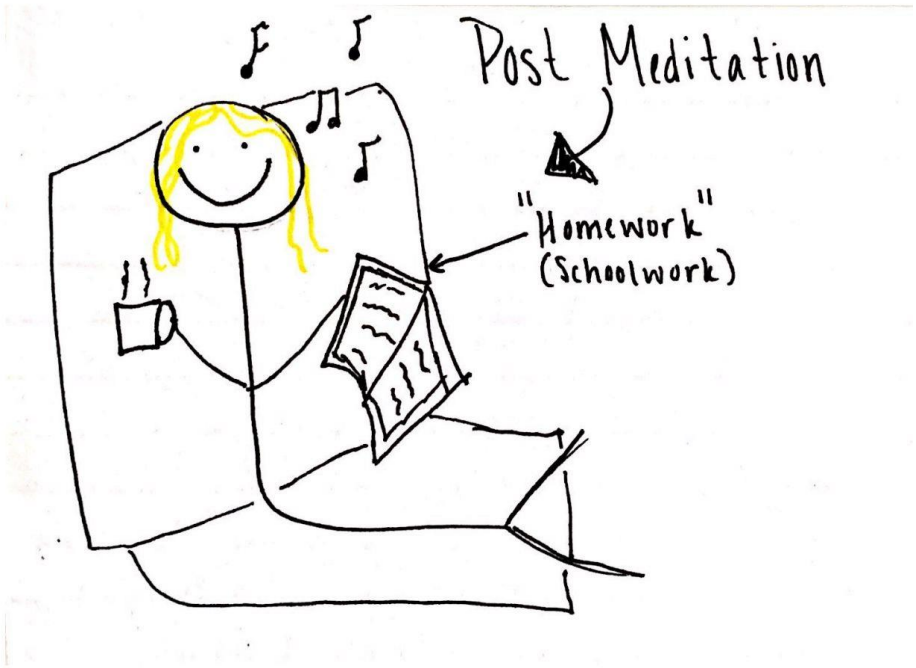
Angela

Angela was a young adult female in the 18-22 age group. An aspiring artist and musician, she shared some of the stresses that came with preparing college applications and

graduation requirements in addition to the regular daily demands of maintaining a high grade-point average and continued involvement in a host of extracurricular activities. For her, stress was an almost fixed condition in her daily life, and she found the moments of meditation to be a refreshing respite from that constant condition. The following is the drawing that she shared exemplifying the greater ease she felt in focusing on tasks after her meditation sessions.

Figure 4.1

Angela's Artwork



Barnold

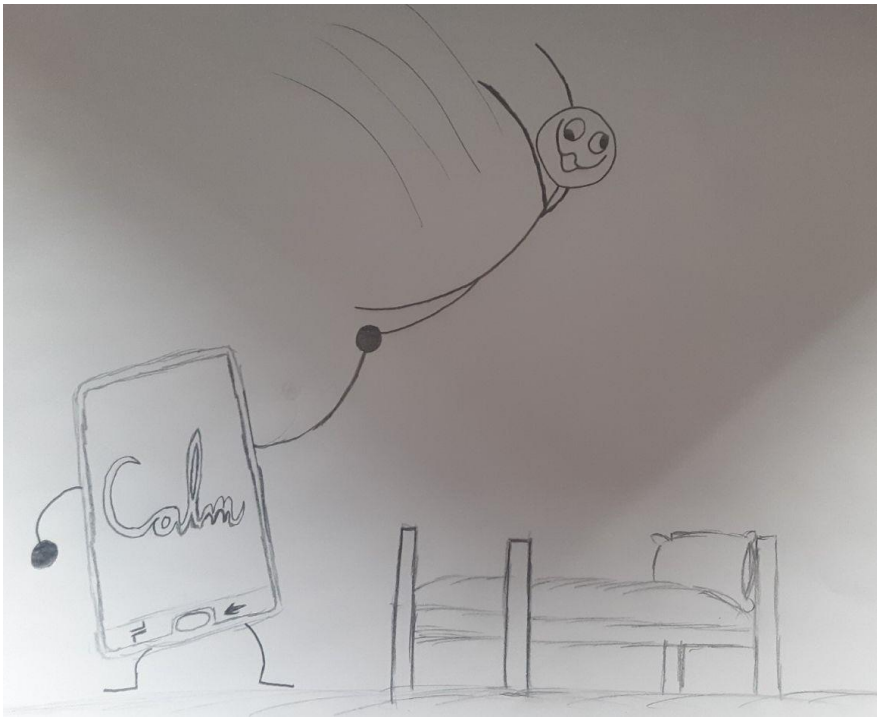
Barnold was a young adult male in the 22-25 age group. In the process of finishing a challenging science-based undergraduate degree, he shared a lot about the relaxation benefits of the meditation app, specifically in relation to improved sleep. He also expressed the potential benefits that could occur if such meditative breaks were interwoven into the timeline of 90-minute science-steeped courses. He shared that concentration, maintained over such long

periods, on advanced analytical thinking, was very difficult to maintain, and the break within the body of the class could be of great benefit. He was especially connected to the sounds of relaxation offered with the app and made several comments about their calming effect and impact on quickened slumber. Additionally, he shared that meditation seemed to finetune a "quicker assessment of others' contributions" during teamwork. In referencing his artwork and the topic of sleep, Barnold explained:

> I have a nasty habit of staying up late while working on the computer, and generally it takes me a while to be able to fall asleep directly after staring at the screen. While using the Calm app I have found that listening to the nature sounds section makes it much easier to fall asleep and sleep far more soundly, leaving me feeling much more refreshed in the morning.

Figure 4.2

Barnold's Artwork



Cecilia

Cecilia was a young adult female in the 18-22 age group. An aspiring writer and college student, she described the stress of maintaining an impressive academic record while also continuing to explore her expressive opportunities, all while experiencing a physical handicap and disease that posed its own set of physical obstacles. She vividly shared the physical and cognitive benefits that the meditations created for her and the reset of calm she felt when she successfully engaged the app. In her artwork, she shared that she purposely chose the lotus "because they symbolize purity, rebirth, enlightenment, self-rejuvenation, and becoming elevated. So, I painted it with that in mind . . . and I felt like that's what I gained from meditation, and I wanted to reflect that in artwork."

Figure 4.3

Cecilia's Artwork

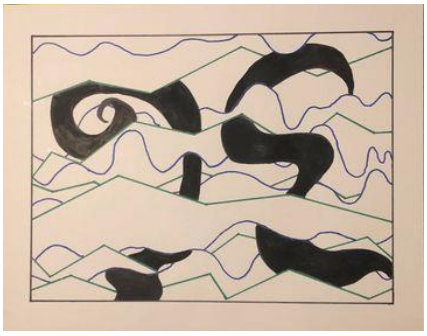
Danny

Danny was a non-binary student in the 18-22 age group and an aspiring arts student in a very busy college performance program. Throughout Danny's interviews and written work, an almost-constant review of time formed a major theme. Danny was racing from one class to another and to multiple rehearsals and meetings as well as organizing teams connected to the school's theater productions. Danny described the copious amounts of stress from little downtime that sometimes caused an eruption of less-than-optimal treatment of those within the community. This polarity between Danny's experience with college life in general and the meditation app created a stark review of themes like self-relaxation, cognitive ease, interpersonal communication, and attention to singular matters versus attempts to solve all at once. The use of color hues also surfaced as an experiential descriptive. Danny and two other participants in this study (Kat and Cecilia), unprompted, described much of their meditation experience by way of color, using specific hues to accentuate their description of emotional states resulting from meditation. In this shared artwork, Danny remarked:

> It was nice to put how I feel into art because it was something familiar; connecting myself to the art and to the meditation...I feel like my brain is very up-down like the triangular zigzags and the meditation rounded it out like the roundish squiggles that I did.

Figure 4.4

Danny's Artwork



Jed

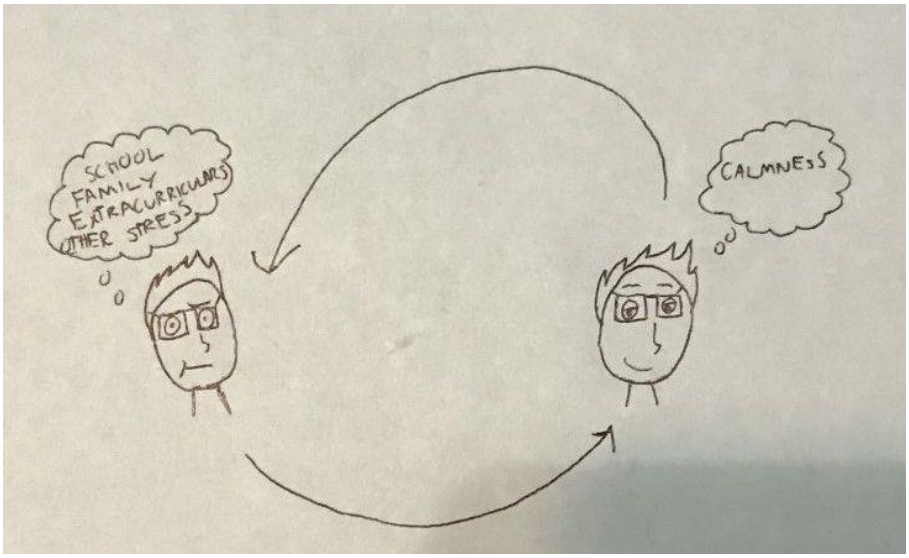
Jed was a male education student in the 18-22 age group. He quickly acknowledged his calm exterior while also revealing his internal anxiety with college and life demands. In his interviews, he shared details regarding the calming, centering effect the meditations had on his interaction with those close to him. He also shared details about the meditation app's favorable impact on his ability to retain level-headedness while dealing with others. Additionally, he became aware of his tendency to drift off in thought as the meditation app sought to keep him focused on his breath. He then started to recognize a pattern of drifting off in thought in his day-to-day life, a new awareness for him. Jed shared:

> I have a lot running through my head on a normal basis . . . heightened during school . . . and whenever I did the meditation app, I was calm for a decent period of time, then after getting back to whatever my routine was, I went back to that mindset.

He continued, "Then the next day, I was calm for a bit . . . [in the picture] the one on the left was my regular state and the one on the right was a break in between."

Figure 4.5

Jed's Artwork



Jill

Jill was a female communications student in the 18-22 age group. Like Jed, she shared a good deal of commentary on the significant assistance the meditation app provided when dealing with individuals within her close circle. She often commented on the "clearing of the mind" that she enjoyed from her experience. Her go-to mode of too-quickly responding to others or events was momentarily replaced with a period of calm reflection prior to response. These open comments elicited vocal agreement from the others in her focus group. Additionally, she remarked on the potential academic benefits that these periods of mental clarity could offer to school systems and curriculums. In reflection of her artwork, Jill shared:

> I was thinking about how I felt doing it [meditating] . . . and the classic image of a peaceful tree on a grassy field is calming; you don't really have anything to worry about there, so that's why I drew that.

Figure 4.6

Jill's Artwork

Kat

Kat was a female visual arts major in the 18-22 age group in the throes of completing her undergraduate program and all concluding assessments. Like Jed, she exhibits a very calm and controlled exterior but shared the stresses she experiences day-to-day. The bulk of her comments dealt with a kinder, gentler, more reflective response to not only other people, as a result of her meditation, but a "simplifying" effect that resulted from her moments of meditation. Additionally, she shared experiential stories, exhibiting a facet of her expressibility, as she described her meditation experience. Interestingly, she, like Danny, used color hues to share her experience describing moments in shades of blue or green. Additionally, she remarked on her excitedness about the app and how she advised several friends to download it and try it out. With regard to her artwork below:

> I don't really like doing self-portraits, but, since meditation is self-reflection and a moment where you explore your own mind and clear it of things, I wanted to do the self-portrait, and that is a kind of thing I'm not normally comfortable doing.

She continued, "But, it came to me: 'I should do it' because this is about my self-exploration through meditation. I chose the brighter colors I see flashing whenever I'm meditating, like lines going across the black of my eyes." She paused and then added, "My art style kind of changed in this. For me, it's either super detailed or cartoon but realistically shaded, so, going for linework approach with colors I don't really use for lines, I think was really fun."

Figure 4.7

Kat's Artwork

Lucy Miller

Lucy was a double major in mass communications and theater in the 18-22 age group. She professed openly in personal and focus group interviews her mental health diagnosis (Health Anxiety and Panic Disorder) and history of counseling and methods for combating high levels of anxiety. As such, she offered a deeper vocabulary of comparative relaxation technique and shared that the meditation app experience had offered significant relief from anxiety, specifically, over the weeks of her involvement. Throughout our discussions and within the written and artwork, the theme of anxiety, methods, recovery, and self-esteem was shared. Lucy remarked:

> I have a hard time going to sleep with anxious, intrusive thoughts, and meditation put me in the right headspace to fall asleep and it, in general, made me a calmer person and

lessened anxiety in the next day . . . and there have been times when I needed to listen to one in the middle of the day because I was really anxious and it definitely has an immediate impact on my anxiety level in general.

Figure 4.8

Lucy's Artwork

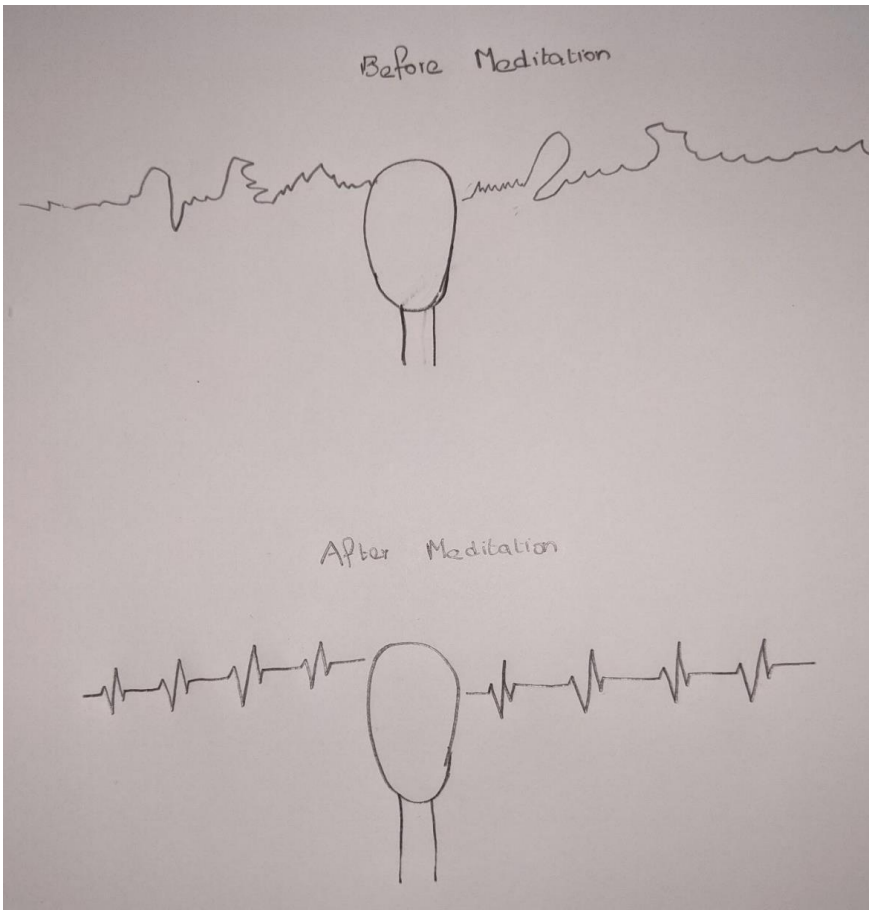
Sibi

Sibi was a grad student in the field of science and in the 23-27 age group. Most of what he shared about his experience with the app had to do with the sleep benefits he felt. He shared that he had often experienced difficulty in calming his mind when it is time to sleep. He shared that he often would end up working through the night and sleeping through the day. With the app use, and notably the calming sounds featured in meditations, he was able to calm his mind and fall asleep faster. He also shared that, with better sleep, he felt more clear-headed and could see the academic benefits from that alone. His artwork shares the impact he felt on his overall

feeling of calm and mental clarity. He remarked that his thoughts could be all over the place, but, after meditation, there was a consistent clarity that lasted for some time.

Figure 4.9

Sibi's Artwork



Raven

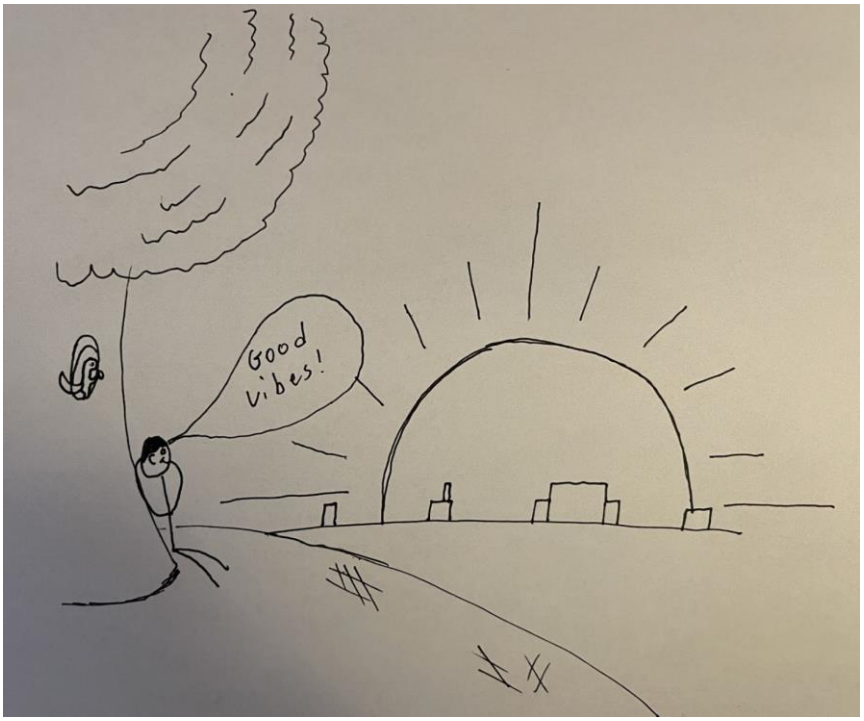
Raven was an undergraduate business student in the 22-25 age group. A self-professed generally calm person, he did share that at times his mind can become fixated on a conundrum or mental puzzle, and he can have trouble moving past this. His remarks often reflected the calming effect the meditation app had on this rumination. He, too, connected with the sounds in the app and reflected on the functionality and differentiating features, both aural and visual, that

he enjoyed. He also commented on the mental clarity and "reset" that occurred as a result of the calming app. In reflection of his artwork, Raven shared:

> I feel that my mental state could be overwhelmed with things that I need to do beforehand. After using the app, I find that I am able to focus on one thing at a time and really put things into perspective. It made me feel more relaxed and ready for the day.

Figure 4.10

Raven's Artwork



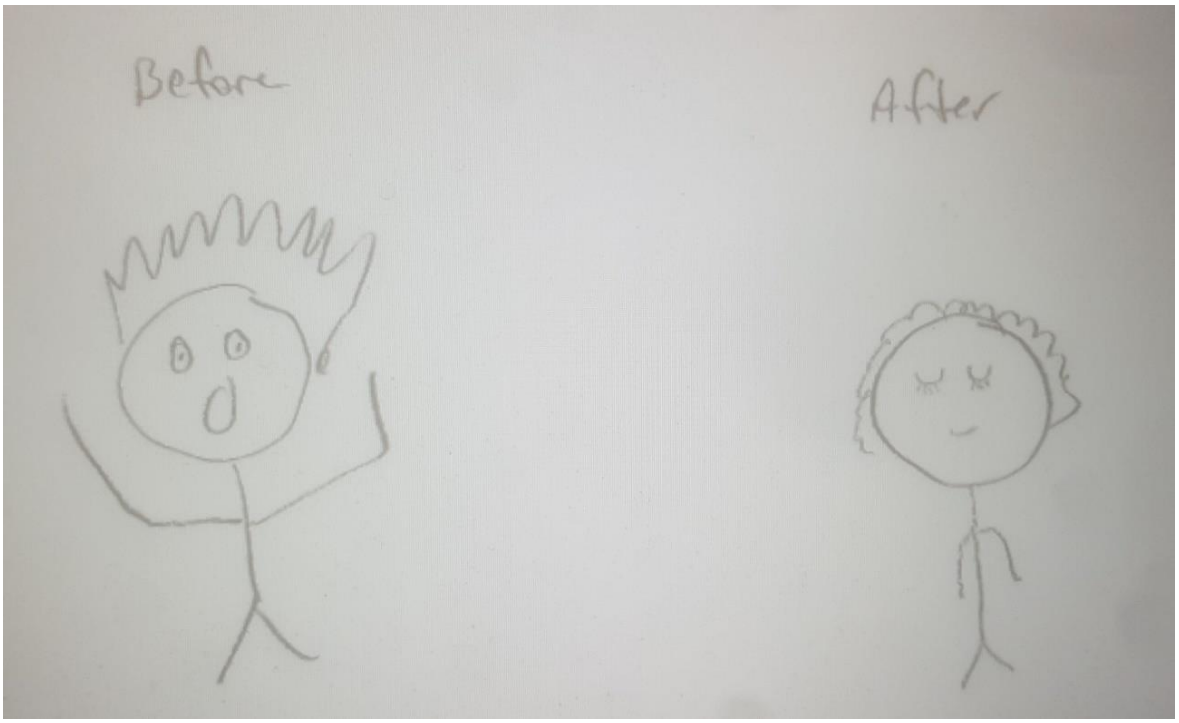
Stacie

Stacie was a doctoral student in the field of music education and belonged to the 45-50 age group. A full-time college educator and doctoral student, she shared that the meditation app was successful in calming her mind and creating a reset; however, she also admitted that there were times when she was so busy that the promise to meditate daily created a bit of anxiety. While she could see the benefit of the 10-minute meditation, she sometimes found difficulty

finding the time to do it. When she was finally home from a long day of teaching, she needed to be with family, so taking time for herself surfaced as a theme for her. She also shared that meditation was most effective for her when she specifically scheduled the time into her daily routine. In reflecting on her drawing, Stacie shared that it perfectly and simply expressed the impact of meditation on her; before meditation, she would often feel highly stressed and, after, quite calm.

Figure 4.11

Stacie's Artwork



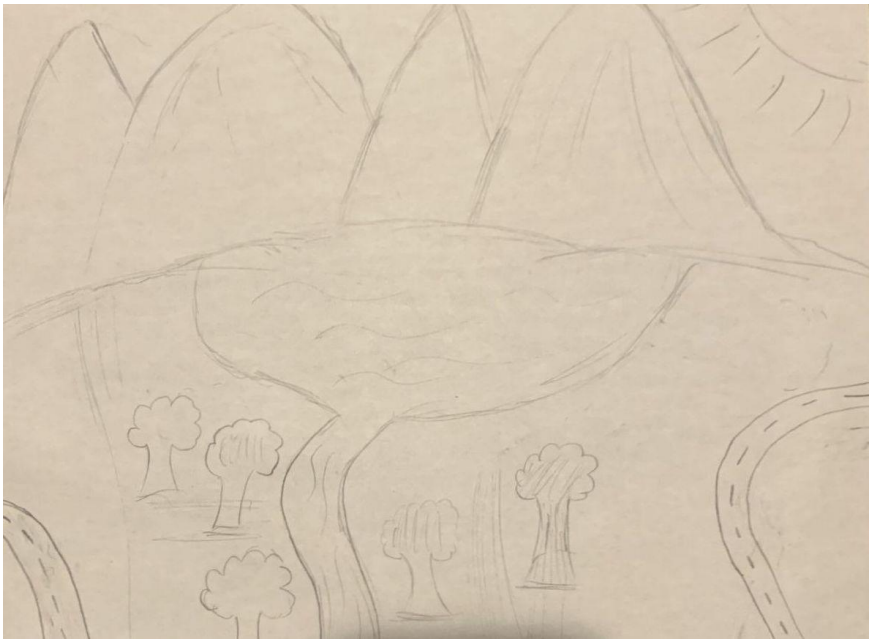
Matt

Matt was an undergraduate theater major in the 18-22 age group. He shared the demands of his busy schedule filled with academic work and rehearsals. His self-professed stress level was high, and he shared stories of how his experience with the meditation app eased his anxieties and diminished his stress. He also alluded to the difference he felt when dealing with others after

a session of meditation, feeling more patience and compassion toward them. He shared that the clarity of mind achieved allowed him to tackle one thing at a time instead of worrying over a conglomeration of multiple stresses. Matt's artwork shares the calm path that meditation guides one to, away from the usual busyness represented by the roads in the picture that begin to pull away as one approaches the calm, open spaces of meditation.

Figure 4.12

Matt's Artwork



Results

The results of this study have been organized by the major themes that were evidenced during data analysis. A discussion of these themes is provided with evidence to corroborate each finding. Additionally, all codes identified within each of the primary themes are provided. The results section concludes with a narrative discussion of the relationship between the data collected and each of the three research questions in this study, as well as the overall relationship between this information and the themes that surfaced.

Theme Development

The data analyzed in this study was collected by way of focus group interviews, personal interviews, and three written methods that included an art project, a writing example by way of a journal prompt, and the selection of a meme/gif. I recorded each interview and, after transcribing, coded the material with aid from the NVivo program and triangulated into the four primary themes that surfaced. The codes and themes are given in the following table:

Table 3

Codes and Data Analysis

Codes	**Code Frequency**	**Theme**
Anxiety (Nerves/Worry)	46	Self-Awareness
Stress	110	
Breath	39	
Confidence	10	
Calm (not in reference to app name)	91	Self Management
Motivation	10	
Negativity	17	
Productivity	7	
Refreshed/Reset	4	
Self-Control	6	
Sleep	41	
Sounds/Visuals/Colors	49	
Appreciation	5	Social Awareness
Empathy/Compassion	22	
Mood	19	
Patience	8	
Communication	19	Social Management
Reaction (Cranky/Toned-Temper, Respectful)	18	
Frustration	10	
Leadership	9	
Level-Headedness	14	

Self-Awareness

Multiple words and phrases were repeated throughout the interviews that belong to the overall theme of self-awareness. These key terms included: Anxiety, nerves, worry, and stress (which seemed similar, so I grouped them together into one cache of data). Other terms that surfaced and were grouped into the overall theme of self-awareness were attentiveness, breath, confidence and self-esteem, and seriousness. With no exception, each participant contributed to this discussion theme. Cecilia shared that she often "worried about friends…I'm the worrier…it (the app) helped me with that." She went on to share that she felt the app could be of significant help to younger students. She shared, "Younger kids, just finding these new stresses…might be helpful for them to have these eight minutes to know, 'Yea, your feelings are valid [and] here are some ways to deal with them." With regard to attentiveness, Kat shared some of what she gained from app use as it related to her virtual learning experience. She explained:

> In Zoom learning, two-hour classes…to focus that long and constantly listen has been hard…after meditation practice, it's taught me better listening skills, taking information in better…being more attentive…not looking at phone…I think I am getting better as a result.

Additionally, Lucy and Sibi both shared some of their insecurities with regard to their belief in their abilities. Lucy shared that she often worries if she is "going to be good enough" and that the meditation experience has helped her to recognize this pattern and when used prior to a challenging situation, she felt more relaxed and calm approaching it. Sibi shared that once he achieved a calm from the app, he would think, "Yes, Sibi, I can do this."

These explorations of self-awareness were certainly a primary and common theme in the student interviews as well as their written responses. Stacey added, "If I take the time to focus on myself, then it gives me more tools to be able to handle stressful things that pop up."

Self-Management

During analysis of interviews and written submissions, the following words often appeared and formed codes that all fell within the theme of self-management: Calm, motivation, negativity, productivity, refreshed/rest, self-control, and sleep, and were often reinforced by the art piece, meme/gif, and written work submitted. With regard to general calm, Danny shared the tendency for mind-racing and that the app meditations helped to "relax my racing mind." In fact, Danny began recommending the app to friends because of this. Kat shared that the meditations allowed her to "take a pause; take a breather; deal with it and don't let it take over." Danny exclaimed, "Sometimes I feel like a caffeine-fueled rage monster. It (the app meditation) helps me see this is a small issue; just calm down." Barnold shared the mental reset that happened as a result of the app meditation. He explained, "If you get bogged down and overthinking, it can cause problems. The app helps clear the head; not second-guess yourself." With regard to productivity, several repeated claims were made about general productivity as well as the indirect benefit of better sleep on productivity. Sibi shared the benefits he felt, in particular, because of his much faster ability to calm the mind and fall asleep. He shared that the sounds of nature were especially effective in this and that better sleep automatically resulted in "better overall performance." He furthered his comments on the value of the nature sounds by sharing his tendency to need sounds in the background while studying and that the app helped him to focus as he "found comfort in the nature sounds." Matt shared, "My favorite part was the background sounds. They brought up earlier childhood memories with my grandmother on our

trips to state parks...peaceful childhood memories. I hadn't really reflected on these positive memories until this app." Kat and Barnold reinforced these claims about better sleep. Kat shared, "The bedtime stories and sounds in the app helped me fall asleep so quickly...and that full night's sleep was really nice." In a twist on this theme, Matt expressed how restful the short meditations were. He stated, "I'm less tired after meditating because of the strength of that renewal...It was almost so much relaxation that, instead of being tired, you are awakened again!"

With regard to self-control, Lucy shared how her experience with the app seemed to mature with each passing day and that her awareness of poor habits began to grow. She shared that, at first, "when the woman wasn't speaking, my mind wandered...and I started becoming aware of that." Cecilia described her experience with self-management as the app helped her to calm and become more comfortable with silence. She shared, "I became more 'okay' with quiet. Normally, I would have felt pressure to talk . . . some kind of sound . . . but now I felt no need to fill the time with sound."

Regarding negativity, several participants shared the break that meditations seemed to give them from negative self-thought. Danny explained, "I can get down on myself if I don't take a breather, and that's something I became conscious about throughout the couple of weeks...it's helped me become more nice to myself." Kat reinforced this as she shared, "The app has helped me 'get it done'...the app pushes away things not necessary...and leaves room for better things...positive energy...and a spike in productivity." Jill furthered this by stating that the meditation app use significantly diminished negative self-thought. Angela shared that much of her stress was due to overthinking and that the app "helped me realize the triviality of my stresses." And Stacey shared, "Meditation gives me better coping skills."

Social Awareness

As analysis of participant response continued, the following codes developed in response to repeated sentiments: Appreciation, empathy and compassion, mood, and patience. Because these attributes have much to do with an individual's understanding of others, they forged to yield an overall theme of social awareness. Appreciation surfaced often in the data collection, both in a heightened general appreciation for the present moment as well as a growing appreciation for what others contribute to a situation. Barnold shared that with the calming of mind that comes with meditation, "it is easier to see the general argument of others; it clicks a tad faster; the general assessment comes faster." Lucy shared that the app helped her "maintain patience and lessened anxiety toward group interaction." Kat shared that she had a bit of a revelation during this experience as she began to realize that "others have the same workload...and the app meditations really helped me gain a greater compassion for others." Danny explained, "The app made me more aware of where others were coming from." The general mood was also a recurring theme as well as how it impacts communication with others. Lucy added that the night before big group meetings, or just prior, she would engage a meditation, and "it helped me be less nervous when having to work with others." Cecilia shared a direct experience with the app with the following:

> I was feeling off. I wasn't feeling all that good and I decided to try to do my daily meditation because I wasn't in the mood for anything else. And after I did that, I felt so much better. So, it's helped me find a way to cope when I don't feel like I have any other way to get out of the rut I'm in.

Patience, or as Danny put it, "toned temper," commonly surfaced in discussions. Raven explained the greater level of patience he felt with his siblings and attributed the calming effect

of the app to this. Jill shared the same impact as she engaged with her older brother on his visit home from college.

Social Management

The fourth theme that surfaced during the data collection process was that of social management. Specifically, how the participants dealt with others and the changes they experienced as a result of the app use. The primary codes that surfaced were: Communication, reaction ("cranky, toned temper, respectful") frustration, leadership, and level-headedness.

Cecilia shared that the app and the lessons included helped her to gain "more appreciation of what others had going on." She remarked on how her respect for them seemed to increase with that appreciation and understanding. Danny shared, "Instead of steam-rolling people, I would slow down and communicate . . . meditation helped me to be more self-reflective and to calm down and press the 'pause' button." With Kat, her comments confirmed this, but she also added that "the app helped me to help others lead in our group work. I realized I didn't have to do everything and could help others to contribute." Jed shared that the calming effect of the app helped him to stay more "level-headed during stressful situations."

Stacey, the college professor, shared that she often uses meditation as a preface to class with her students. She commented:

> I do some beginning meditation with my students before we practice singing. They request it! They've asked before . . . and I think they need it . . . they're stressed. We focus on breathing and the sounds around them . . . The fact that they ask me . . . obviously it has made enough of an impact that they want to continue.

She furthered, "I do notice afterward that they are calm...so, it must have some benefits on them." Matt added that as a college student, meditation gives him the chance to "not be in the

real world for a second." He shared, "I find that helps in how I handle situations . . . if I'm getting too stressed out, I can try to find where that good mental positive space is."

Research Question Responses

The following section provides a narrative response to each of the research questions. The responses come from data collected during interviews, focus groups, and the art piece, meme/gif, and journal response. This section primarily deals with the themes that were developed in the previous section and includes participant quotes to support the assertions.

RQ1: How does a mindfulness meditation app affect students in rural Virginia academically?

Though each of the four themes developed contribute toward the CALM app's use-effects, the two that stand out more prominently, with regard to potential academic effects, are self-awareness and self-management. Participants shared how heightened levels of attentiveness, self-confidence, motivation, self-control, and proper sleep all contributed toward a more productive work ethic and quality of work. Stacey's use of meditation during the teaching of her college courses and the obvious impact she says it has on her students' stress level coincides with the evidence presented earlier in this study on the positive impact that occurs on academics when stress is diminished. Stacey also shared her present use of meditation during the two most stressful activities of her life: work and dissertation prep. "When at work, that's when it seems to work the best" as a break from the mental strain. Her inclusion of a meme/gif in her written responses displayed a female peacefully seated with legs crossed and eyes closed and included this description: "The whole point of meditation is to deal with everything around you, so that's how I feel."

Although none of the participants were able to concretely share that their grades had improved over the two-week use of the meditation app, many shared potential academic

advantages they felt would become evident with prolonged use. Barnold explained, "I'd get less anxious over stuff, although I guess in terms of higher grades, it was maybe a slight increase . . . but that's, even on its own, quite valuable." He also shared comments about how he thought this practice could be valuable in terms of lengthy class times. He stated, "Some classes are like an hour and a half, and especially if it's a STEM class, like 'concrete' rather than 'abstract,' you tend to get worn out and meditation just helps you focus and reorient." Cecilia shared that meditation is valuable when, in coursework, "you have no clue what's going on, everything is moving way too quickly, and you need to slow down, especially during test weeks." Angela stated:

> Definitely, in my school, it has helped me concentrate longer and keep my focus...it takes me a few minutes shorter to do school work because it's allowed me to focus more, especially in lectures and things that take an extended period of time...also, unnecessary stress would be eliminated.

Danny added, "Finding motivation to get started is always the hardest part for me, but meditation helps me organize my brain to get motivated." Jill shared the value of meditation on academics in this statement:

> After I finished a meditation, I found that it was a lot easier to get in the right mindset to get a lot of work done...I would immediately start school work, and I noticed I was able to finish assignments faster.

She added that "if schools incorporated meditation and the other students reacted the way I did, work would be done a lot faster and there wouldn't be as much distraction."

RQ2: How does a mindfulness meditation app affect students in rural Virginia socially?

The theme of social awareness was strongly evident in the data collected. The codes specific to this theme and to the research question about the mindfulness meditation app's social effect include appreciation, empathy and compassion, mood, and patience. According to comments from participants, meditation seems to have an impact on a person's intuitive understanding of the emotional needs of students around them. Matt shared that the meditation app "is good at shifting perspective on negative situations." He added:

> My dance teacher meditates and she is a really pleasant and kind teacher and I think it might be because of that, because she takes that moment of perspective...and it affects us in the way of chilling out. We were stressed out and she knew we needed that meditation.

Angela shared that she often would overthink situations with school and friends and family and that her practice with the meditation app seemed to help her "realize the triviality of my stresses." Often, as shared in earlier quotations, the themes of appreciation, empathy and compassion, mood, and patience surfaced again and again to further the understanding of meditation's impact on students socially.

RQ3: How does a mindfulness meditation app affect students in rural Virginia behaviorally?

It is the data that falls within the umbrella of social management that addresses the mindfulness mediation app's effect on the behavior of these participants. The codes that surfaced during interviews were: Communication, reaction ("cranky/toned temper/respectful"), frustration, leadership, and level-headedness. In reviewing these codes, all of them deal with aspects of how one responds or works with one another, and they all point toward potential positive behavioral effects, as is evident from the participant responses. Matt shared, "I'll get

frustrated with people, but more recently, I step back...I'm more slow to anger...it (meditation) works better than I expected." Jed added, "I am able to remain level-headed during stressful situations . . . renewed and less stressed after the meditation." He added: "It goes a more positive and beneficial route. I say, 'Oh, okay, this negative event really isn't that bad. It helps me put everything into better perspective . . . Okay. . . I'm going to be alright." Stacey added that her students "seemed much less agitated after the meditations." Danny discussed in more vivid terms the impact that meditation has had on their "freaking out" on people. Danny stated:

> Meditation made me take a few steps back when something stressful would happen instead of freaking out . . . I work in a dangerous place . . . so if something unsafe happens and somebody knocks over equipment that could have killed somebody, it's easy for me to freak out on that person, but, through meditation, it reminds me to take a second before, because it's not like they intentional meant to do harm.

Through Danny's meditation, they came to understand themselves a bit more. Danny shared:

> For me, I can more put myself in other's shoes because now I understand my mind a little more because I had to shut it up...So I would be like, this person may not 100% be in the moment because they are thinking about the next thing...because I do that! So, I can't yell at them for not being present because I do that!

Jed added, "If someone's being a jerk, it helps you approach things more mellow." Jill added, "If I meditated, I found I ran into fewer negative instances because my mind was more clear; I was happier." Sibi shared that meditation caused him to remember to be calm when dealing with others. He expressed that sentiment with his provided gif that featured a monkey in a perfectly calm seated position with eyes closed.

The participants shared unanimously that the practice of meditation helped them see that something perceived as a major event was often quite minor. Regarding perspective, Kat shared that "it helped me look past or not even notice the small things that might have bothered me before . . . instead of reacting with anger, it helped me realize and be more sympathetic. Lucy added that the increase of empathy that resulted from her meditation helped her to "stop and not be too quick to anger and frustration." She added, "Meditation helped me to be less frantic in general . . . being frantic physically makes it hard to make decisions that are well thought out." Raven added that the meditations helped him to clear his "scatterbrained mind" and "gave me more patience with people; it was easier to understand where they're coming from because I was able to listen because I didn't have that scatterbrained issue."

Summary

This chapter introduced each of the twelve participants in an effort to familiarize some of their characteristics to the reader. Additionally, a thorough list of the primary codes that surfaced during data analysis is provided as well as the four major themes that seem to overarch the many codes developed. The four primary themes are self-awareness, self-management, social awareness, and social management. These four themes also address the three primary characteristics under research in this study: the app-use effect on students academically, socially, and behaviorally. The explanation of thematic data is presented by way of narrative text and participant quotes to validate the assertions made. Lastly, data is shared by way of both the thematic perspective and its relationship to the study's three research questions: RQ1: How does a mindfulness meditation app affect students in rural Virginia academically, RQ2: How does a mindfulness meditation app affect students in rural Virginia socially, and RQ3: How does a mindfulness meditation app affect students in rural Virginia behaviorally?

CHAPTER FIVE: CONCLUSION

Overview

The purpose of this qualitative instrumental case study is to explore how an introduction of the mindfulness meditation app (*Calm*) affects students in rural Virginia. This chapter begins with a summary of the findings and their relationship to each of the three research questions explored in this study. The chapter then discusses the findings as they relate to the empirical literature on meditation and the theoretic literature on Goleman's theory of emotional intelligence. Included in this part is a statement of this study's contribution to the existent empirical and theoretical literature. The chapter then covers the theoretical, empirical, and practical implications inherent in the findings as well as the author's recommendation to educational stakeholders, delimitations and limitations of the study, and recommendations for future research. The chapter closes with a summary of the most important takeaways from the study.

Summary of Findings

As a result of the data collection methods incorporated into this study, a set of codes surfaced that were then forged to create four underlying themes: Self-awareness, self-management, social awareness, and social management. These codes developed repeatedly and surfaced as a result of the transcription and coding procedures outlined in chapter three. Each code exemplifies an obvious impact on how we interact with ourselves and the environment, and each of the resultant overarching themes connects with the primary research questions investigated in the study. **RQ1**: How does a mindfulness meditation app affect students in rural Virginia academically? With regard to RQ1, the evidence suggests that each participant gained insight into their understanding of self. Some awareness gains included increased understanding

of worries and their sources, abilities to sense within the body a need to relax and achieve a calmer perspective on present moment challenges, heightened ability to focus, and for longer periods of time, heightened sense of self-value, as well as the participants' awareness of stress at its early stages of onset. This increased awareness often informed them of the need to stop and counter the growing anxiety with meditation before it blossomed into higher stress. With regard to the second theme, self-management, participants were able to incorporate meditation practice, achieve calm, diminish stress, minimize overthinking and second-guessing of self, increase general productivity, improve sleep, and feel refreshed during mid-day meditations. Additional expressed benefits from the participants included becoming more conscious of negative self-thought and rumination, as well as a general improvement in positive energy. **RQ2**: How does a mindfulness meditation app affect students in rural Virginia socially? With social awareness as a third primary theme that surfaced in this study's data analysis, participants increased their appreciation of others and the contributions others made to their environment. Participants shared that a faster assessment of other's contributions, for example, to discussions or group work, as well as a heightened assessment of other's emotional state, was experienced. Additionally, positively enhanced mood, diminished stress in working with others, increased patience, and compassion was experienced. **RQ3**: How does a mindfulness meditation app affect students in rural Virginia behaviorally? The fourth primary theme that surfaced in this study's data analysis was social management. Participants shared their increased respect for others, their enhanced calm around them, and their increased ability to slow down and communicate more effectively with others. Also, participants shared that their observations of others practicing meditation revealed the general calm and increased productivity that resulted.

Discussion

This section discusses the study findings within the context of the empirical and theoretical literature reviewed in Chapter Two. The findings are juxtaposed, first, with the aforementioned research on meditation. Then, the findings are explored within the scope of the research reviewed on Goleman's theory of emotional intelligence. This section then closes with an explanation of the contribution these findings make to the existent field of research.

Relationship to the Empirical Literature

The data analyzed in this study illuminated the multiple codes that then forged to form four primary themes: Self-awareness, self-management, social awareness, and social management. Literature on the subject of meditation shared in chapter two of this study described the relationship between meditation and the theoretical basis of this study: Daniel Goleman's Theory of Emotional Intelligence. Meditation has been scientifically identified for its evidence-based strategy in regulating emotion and self-care (Gutierrez et al., 2016). This study corroborates that premise as participants shared multiple examples of heightened personal and social-emotional awareness, and abilities to diminish stress and anxiety by way of the *Calm* app. With regard to heightened personal awareness, participants in this study mentioned diminished anxiety and stress a total of 46 and 110 times respectively during interviews, a significant amount of conversation was dedicated to this growth during interviews as well as expressed in the artwork and written journals. Additionally, the topic of confidence appeared in their comments collectively ten times as participants discussed the heightened level of overall confidence they achieved as a direct result of the meditation. Regarding social awareness, the common codes or discussion points were appreciation, empathy and compassion, mood, and patience, which were addressed five, 22, 19, and eight times respectively. The frequency with

which empathy and enhanced mood were mentioned and/or expressed in the participants' artwork is indicative of the significance the use of the meditation app had on each of them.

Research also indicates an enhanced ability, by way of meditation, to understand one's emotions as well as clarifying feelings and lowering distraction (Charoensukmongkol, 2014). Regulation and control of emotions are positively associated with meditation (Cahn & Polich, 2006; Charoensukmongkol, 2014), increased resilience (Wendt et al., 2015), decreased distress (Elder et al., 2014; Nidich et al., 2009; Williams-Orlando, 2015), increased creativity (So & Orne-Johnson, 2011), increased productivity (Frew, 1974), reductions in negative behavior (Barnes et al., 2003), and improvements in sleep, self-control, and general happiness (Wendt et al., 2015). With regard to self-management, the prominent codes that surfaced from this study included enhanced calm, enhanced motivation, decreased negativity toward others, increased productivity, and enhanced sleep. Enhanced calm was discussed in open-ended response a total of 91 times from the participant pool. An increase in motivation was a primary discussion point ten times. Participants also described how the meditation app diminished their level of general negativity. This discussion point surfaced in interviews a total of 17 times. The topic of sleep was a hugely significant portion of the advantages that participants shared as a direct benefit from their participation in this study. Sleep was discussed a total of 41 times during interviews and expressed in participant artwork (see Figure 4.2, *Barnold's Artwork*). Multiple examples shared from this study corroborate all of these empirical findings as each of the four themes of self-awareness, self-management, social awareness, and social management are exemplified and explored. These personal and interpersonal aspects are shared in open-ended discussion in this study's interviews, focus groups, and written documents. The sheer number of times these

benefits were offered during the participant's open-ended responses is clearly indicative of the value they held in those particular experiences as a result of their overall app use.

Relationship to the Theoretical Literature

The codes and themes that surfaced in this study serve to corroborate the premise present within Goleman's Theory of Emotional Intelligence, especially in regard to the benefits individuals with heightened emotional intelligence experience when dealing with internal and external stress. According to Gutierrez et al. (2016), a relationship between meditation and emotional intelligence is found that indicates emotional intelligence to be an "effectiveness moderator" when meditation is introduced as an intervention. In this study, as students interacted with the *Calm* app and experienced the daily meditations, they reported significant positive changes in stress level, mood, patience, and compassion. In fact, the topic of stress was coded a total of 110 times during data collection with participants indicating a significant decrease in stress as a direct result of their use of the meditation app and an indirect benefit from the increase in sleep that they were unanimously able to achieve. In addition to the high number of coding for the word "stress", the related term "anxiety" was coded 46 times from the interviews, artwork, and written documents. Participants discussed enhanced mood, decreased overall negativity, and increased patience a total of 19, 17, and 8 times respectively. On 18 occurrences, the topic of improved response toward others was discussed. Their responses often surfaced codes that fell well in line with Goleman's competency model, and the themes that resulted easily match the model, which includes self-awareness, self-management, social awareness, and social management. It is important to note that the list of recurring codes developed naturally from the transcription and coding, and, once compiled, as themes were developing, they fell naturally into how we deal with our individual understanding and how we

manage ourselves as a result. Further, the codes fell naturally into how we learn to empathize and understand the world around us as well as how we then choose to interact with it. The themes that developed from the codes match with those set forth by Goleman's competency model. These codes, shared so openly by the participants in this study, and their resultant personal and social themes support the evidence that there may be a link between our thoughts, behaviors, and actions. Further, the codes and resultant themes support research indicating the practice of meditation with the Calm app can have an impact on these emotional intelligence aspects.

With regard to personal aspects, and in congruence with existent research, this study indicates a positive relationship between meditation and an individual's emotional intelligence, including an enhanced ability to understand one's emotions as well as a clarity of feelings, attention to feelings, and lowered levels of distraction (Cahn & Polich, 2006; Charoensukmongkol, 2014), increased levels of resilience (Wendt et al., 2015), decreased psychological distress (Elder et al.,2014; Nidich et al.2009; Williams-Orlando, 2015), increased intelligence and creativity (So & Orne-Johnson, 2001), increased work productivity (Frew, 1974), reductions in negative behavior (Barnes et al., 2003) and improvements in sleep, self-confidence, and general happiness (Wendt et al., 2015). The students in this study not only expressed the development of these heightened personal abilities, they also shared instances of faster recovery from stressors. Codes that included patience, self-control, and productivity surfaced eight, six, and seven times respectively. In this study's participant pool, overall improvements in communication coded a total of 19 times in addition to related occurrences with the terms, reaction, frustration, and level-headedness. Further, as research indicates that meditation produces increases in positive emotions (Fredrickson et al., 2008; Gutierrez et al.,

2016), students in this study often brought up the topic of positivity as it forged a part of both their personal and interpersonal experience. Associated codes for increased positivity included appreciation, compassion, reaction, enhanced mood, and decreased frustration which combined for a total number of 74 occurrences in data collection.

Contribution to the Field

The results of this research both confirm earlier studies indicating significant advantages for students who incorporate meditation into their routine and, the study extends qualitative understanding of the topic by capturing the perspective of students in a rural Virginia setting; most of whom had never engaged in a meditation program perhaps because of its lessened practice in rural settings. This study also acknowledges and corroborates research on Goleman's Theory of Emotional Intelligence. Surfacing in this study were the very themes expressed in Goleman's four-prong competency model of emotional intelligence. Unbeknownst to the participants, the themes of self-awareness, self-management, social awareness, and social management that surfaced from the multiple codes found in their discussions and written samples, point directly to Goleman's instrument for emotional intelligence analysis corroborating this tool of measurement.

Implications

The purpose of this section is to address the theoretical, empirical, and practical implications that surface as a result of this study. The theoretical implications explore how the use of a meditation app has a significant impact on the overall level of emotional intelligence for each participant. The empirical implications explore the perspective of the Virginia rural student and both the corroborative evidence presented as well as the gap filled from this unique student perspective. The practical implications explore how this new evidence can be used to enhance

understanding and influence the response of educational leaders as they seek new methods for increasing the productivity and health of their students. This section will conclude with specific recommendations for administrators, teachers, students, and parents as this group serves as the most direct stakeholder in the benefits described.

Theoretical Implications

A growing body of research positively associates the benefits of meditation with heightened emotional intelligence (Charoensukmongkol, 2014; Sakir et al., 2017; Wendt et al., 2015). Additionally, research indicates meditation negatively relates to general perceived stress directly and indirectly by way of emotional intelligence (Charoensukmongkol, 2014). Recent research on meditation indicates a link to well-being and lower anxiety (Wendt et al.,2015), academic achievement (Afalobi et al., 2009), and emotional resilience and coping strategies (Jung et al., 2016). Quantitative research specifically on school-based meditation programs shows increases in psychological well-being, higher resilience, and lower anxiety among participants (Wendt et al., 2015). The results of this study corroborate these findings and provide a voice and new perspective for students in rural Virginia. With regard to student stress and anxiety, this study's participants shared that their participation with the app decreased their levels. The topic of anxiety was coded 46 times in data collection and the topic of stress was brought up 110 times. The entire group of participants clearly were driven to share how their participation in the study impacted their stress and anxiety levels. In sharing how the participants reacted to the meditation practice, they exemplified aspects of emotional intelligence and commented on the positive impact it had. The topics of increased confidence (10 codings/occurrences), increased overall calm (91), motivation (10), decreased negativity (17), empathy (22), enhanced mood (19), patience (8), enhanced communication with others (19), and

improved reaction with others (18) are all responses to their participation with the meditation app and all improved aspects of emotional intelligence. This study not only explores the relationship between emotional intelligence and meditation, but it confirms earlier research that the practice of meditation can directly increase overall emotional intelligence Further, it adds a new body of evidence with coding examples that clarify exactly how the practice of meditation impacts and potentially augments emotional intelligence, and it specifies, by examination of the participant responses, the particular areas that experienced abounding impact.

With regard to the implications this study presents to the theory of emotional intelligence, the combination of the included pattern of repeated codes forge directly into the themes presented by Daniel Goleman (2000) in his emotional intelligence competency model (Parrish, 2015). In open-ended discussion, the participants of this study shared multiple emotional responses to the app-participation process that explored the four primary themes of self-awareness, self-management, social awareness, and social management. This study adds the rural Virginia adult student perspective to the body of research, corroborating the theory of emotional intelligence and the research on meditation.

Empirical Implications

This study sought to fill a gap in the research with regard to rural Virginia student perspective of a meditation app. As such, the perspective gained from this examination increases qualitative understanding of how a meditation app affects students in rural Virginia. The codings and themes that developed from the analysis of the participants' response include improvements in self-awareness, self-management, social awareness, and social management. The participants unanimously shared that they felt a daily use of the app would yield positive results for a student of any age. The data analysis for this study indicates that the meditation app increased the

overall mental, emotional, and academic health of the participants. Improvements in anxiety and stress levels, increased calm, and increased motivation and self-control surfaced as recurring codes throughout the data collection process. Additionally, decreased negativity, enhanced sleep, and increased overall appreciation and empathy were discussed and brought up in significant number as is expressed in Table 3 of this study. Further, enhanced mood and increased levels of patience were discussed a total of 27 times in data collection and diminished levels of frustration surfaced 10 times. Adding to existent research (Barnes et al., 2003; Cahn & Polich, 2006; Charoensukmongkol, 2014; Elder et al., 2014; Frew, 1974; Nidich et al., 2009; So & Orne-Johnson, 2011; Wendt et al., 2015; Williams-Orlando, 2015), this study adds a wealth of direct benefits that were of obvious importance to the participants not only because they mentioned them in open-ended discussion but because of the sheer number of times these topics were broached collectively. Because of this, educational leaders, especially teachers and principals, should carefully consider its inclusion in the daily routine of its students. The evidence presented in this study corroborates former studies on meditation and presents a strong case for its inclusion in rural Virginia educational communities. Furthermore, though a recent study (Boyle, 2019) shares the perspective of teacher-use of the meditation app, the dearth of qualitative research on student perspective, in particular rural student perspective, needed to be filled. Boyle (2019) also shared that recommended future research should include examination of different geographic regions as well as gender. This study adds the qualitative perspective of the rural student, giving voice to this unique subset as well as exploring the perspective of male, female, and non-binary students, thus adding new information to the existent research on the topic of meditation app use in education.

Practical Implications

This study presents themes that corroborate prior research on meditation and its impact on students. Its success with the twelve rural student participants indicates a potential for replicated success among a larger body of participants. The mindfulness meditation app, *Calm*, diminished student stress, increased overall wellness, granted heightened levels of patience and compassion, and increased both personal and social aspects for the participants. All of these positive aspects are shown in research to yield greater academic potential and increased emotional intelligence (Campion & Rocco, 2009; Jung et al., 2016) and may add great value to school systems if implemented.

Stress and anxiety are at high levels now with students and educators are looking for implementations that can decrease student stress and increase student well-being. Educators are also obviously looking for implementations that can be afforded within each community. They must carefully weigh the impact of multiple approaches to this decrease in stress and increase in well-being. This study illuminates a long list, expressed openly by the very students who are among the demographic so overwhelmed with stress and anxiety. Their responses as reflected in this study indicate a clear and practical approach toward solving these issues by way of meditation app use.

Recommendations to Stakeholders

The results of this study indicate that a practice of meditation yields many potential academic, social, and behavioral advantages as well as a potential increase in overall emotional intelligence. As the research shared in this study suggests that increased emotional intelligence can yield increased cognitive ability, it is highly encouraged that meditation be used in some form on a daily basis within an academic program. The long list of advantages that the

participants in this study shared in open-ended discussion, in artwork, and in journal, including, but not limited to, diminished student stress, increased overall wellness, heightened levels of patience and compassion, and increased personal and social aspects, indicate a clear and significant value to the use of this meditation app and its potential inclusion in a classroom or school curriculum.

Delimitations and Limitations

For this study, with regard to purposeful delimitations, only adult students from rural Virginia were included in the participant pool. This particular group was selected because of the lack of perspective for rural students found in the literature related to the field of meditation. Limitations include the specificity of location in rural Virginia, the use of only adult participants, and, because this is a qualitative case study, the number of participants is twelve. An additional limitation is the time period that students had to participate with the app. With only two weeks of active app use, it was not possible to capture a true academic impact from the student practice. Though they shared the personal and social-emotional benefits achieved in addition to physical benefits like enhanced sleep, several participants implied that a positive academic result could occur; however, the short time period of investigation did not allow a thorough view of this impact. Though substantial for case study research, generalizability cannot be achieved.

Recommendations for Future Research

In recognition of the findings, the limitations, and the delimitations of this study, several recommendations for future research are provided. Additional studies could compare/contrast meditation program impact on rural males versus rural females to see if any differences exist in their overall attitude and or willingness to participate, as well as results. Additionally, a larger participant pool could be examined. Rural student reactions versus urban student reactions might

be examined as well as geographic differences that might surface in a study analyzing student response from different areas of the country. Studies might also be conducted to compare student responses in differing fields of educational pursuit. For example, do students in the arts have a higher willingness to participate than those in the modern sciences? Studies specific to enhanced sleep by way of meditation app practice could be conducted and nestled within the theory of emotional intelligence. As this study dealt primarily with the *Calm* meditation app, studies that examine and compare student response to multiple meditation apps could yield interesting data on how/why a particular app is more widely accepted than another. Studies, both quantitative and qualitative that examine the compassion impact of meditation app use would also be of value in garnering increased data on social awareness and management; two key components of Goleman's competency model and two primary themes surfaced in this study.

Summary

The purpose of this qualitative instrumental case study was to explore how an introduction of the mindfulness meditation app (*Calm*) affects students in rural Virginia. Research shows that meditation training in schools can improve cognitive abilities as well as increasing social and emotional intelligence and well-being (Klingbeil et al., 2017; Schonert-Reichl et al., 2015). Research on meditation app use has recently been conducted to explore teacher perspectives on its use (Boyle, 2019). This study sought to build upon Boyle's research by giving voice to students actively engaging with the app. The interviews and written materials collected from each participant in this case study illuminated and corroborated earlier research on meditation advantages.

School systems have a huge task as they try to create learning environments that are conducive to the students in their charge. Not only must they create these environments, they

must also navigate options that might diminish stress and anxiety in order for their students to rise to their ultimate potential. With student stress at all-time highs, school administrators and teachers must select the most beneficial and cost-effective practices to promote student success. The research shared within this study indicates a rich supply of advantages that may come forth by including the use of the meditation app explored within. If eight to 10 guided minutes, spread strategically throughout a student's day, could yield such clarity of thought, perspective, patience, compassion, and calm, and give students a tool to help them sleep at night, potentially overcoming conditions of negative self-thought, rumination, and mind-racing, how can we not incorporate this practice? If this practice can increase one's emotional intelligence by way of personal and interpersonal skill development in self-awareness, self-management, social awareness, and social management, it must be carefully considered for inclusion in a daily schedule and curriculum.

This study presents new insight and corroborating data that needs to be considered by school systems, students, parents, and administrators who may not have heard of it, or, have heard of it but have not given it a chance. The findings in this study corroborate the research on the positive potential in these brief moments of calm and meditation. In a day when schools are actively seeking methods to alleviate student stress and anxiety, address behavioral issues, and heighten academic and cognitive achievement, the inclusion of a meditation period during the day can be achieved by way of a phone app like *Calm*. This study gives voice to the rural students of Virginia and what they have to say could revolutionize the learning environment and mental health of any who dare to change.

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APPENDIX A: IRB Approval

LIBERTY UNIVERSITY.
INSTITUTIONAL REVIEW BOARD

August 14, 2020

James Eggleston
Barbara White

Re: IRB Exemption - IRB-FY20-21-34 An Instrumental Case Study of the Student Perspective of a Smart Phone Meditation App in Rural Virginia

Dear James Eggleston, Barbara White:

The Liberty University Institutional Review Board (IRB) has reviewed your application in accordance with the Office for Human Research Protections (OHRP) and Food and Drug Administration (FDA) regulations and finds your study to be exempt from further IRB review. This means you may begin your research with the data safeguarding methods mentioned in your approved application, and no further IRB oversight is required.

Your study falls under the following exemption category, which identifies specific situations in which human participants research is exempt from the policy set forth in 45 CFR 46: 101(b):

Category 2.(iii). Research that only includes interactions involving educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures, or observation of public behavior (including visual or auditory recording) if at least one of the following criteria is met:
The information obtained is recorded by the investigator in such a manner that the identity of the human subjects can readily be ascertained, directly or through identifiers linked to the subjects, and an IRB conducts a limited IRB review to make the determination required by §46.111(a)(7).

Your stamped consent form can be found under the Attachments tab within the Submission Details section of your study on Cayuse IRB. This form should be copied and used to gain the consent of your research participants. If you plan to provide your consent information electronically, the contents of the attached consent document should be made available without alteration.

Please note that this exemption only applies to your current research application, and any

modifications to your protocol must be reported to the Liberty University IRB for verification of continued exemption status. You may report these changes by completing a modification submission through your Cayuse IRB account.

If you have any questions about this exemption or need assistance in determining whether possible modifications to your protocol would change your exemption status, please email us at irb@liberty.edu.

Sincerely,
G. Michele Baker, MA, CIP
Administrative Chair of Institutional Research
Research Ethics Office

APPENDIX B: Recruitment Flyer

Research Participants Needed

Mindfulness and Emotional Intelligence Study

- Do you own a smartphone?
- Are you 18 years of age or older and in high school or college?
- Would you like to learn how to potentially calm anxiety?
- Would you like to learn more about the health benefits of mindfulness?
- Would you like to gain quick and easy tips for increasing cognitive ability?

If you answered **yes** to any of these questions, you may be eligible to participate in a mindfulness meditation and emotional intelligence study.

The purpose of this research is to explore how a mindfulness meditation app affects students in rural Virginia. Participants will be asked to do the following:

- Download a smartphone application called, *Calm*. Free access for 30 days provided.
- Use the app daily for a period of 2 weeks. This can be done from anywhere at any time.
- Daily meditations are available that last about ten minutes.

At the end of the 2-week period, join a video chat to share a picture, brief written reflection, and a meme/gif about your experience followed by a focus group discussion (Estimated Time: 1 hour)

- Participate in a personal recorded interview (Estimated Time: 45 minutes)

-POTENTIAL BENEFITS-

Research-backed benefits of mindfulness meditation include its effect on emotional intelligence, resilience and coping strategies, physical and emotional well-being, cognitive abilities, lowered anxiety, attention regulation, improved academic achievement, and more! Further, research suggests that meditation may have a positive impact on participants with ADHD, Autism, PTSD, Conduct Disorder, Substance Abuse, Insomnia, Epilepsy, Pain Management, Eating Disorders, and Depression.

The study is being conducted throughout SW Virginia. In response to Covid-19 social distancing recommendations, all interaction will take place via video chat and email. James Eggleston, a doctoral candidate in the School of Education at Liberty University, is conducting this study. P**lease contact James Eggleston** [redacted] **for more information.**

Appendix C: Recruitment Template: Email, Letter, or Verbal Script

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. The purpose of my research is to explore how a mindfulness meditation app affects students in rural Virginia and I am writing to invite eligible participants to join my study.

Participants must be 18 years of age or older, currently enrolled as a high school senior or college student, must own a smartphone that will sustain the *Calm* app, and must provide signed consent agreeing to participate in the *Calm* mindfulness meditation app daily for two weeks and the data collection methods that follow. Taking part in this research project is voluntary. Participants, if willing, will be asked to fill out a brief questionnaire (for demographic purposes only). Download the *Calm* meditation app onto your smart phone and use it daily for two weeks. The app offers a daily meditation that is approximately ten minutes in length.
After the two-week period of daily meditations is complete, you will meet over video chat to complete three document tasks which include a drawing (no art talents required), a written response to a prompt about your experience, and your selection of a meme/gif from the Internet that might best represent how you feel about your meditation experience. After that is done, there will be a 30-minute focus group discussion which will be recorded, stored securely, and only viewed by the researcher and perhaps a professional transcriptionist.
Lastly, the researcher will schedule a personal interview with you over video chat to gain your perspective on the smartphone app experience. The interview consists of some open-ended questions and will be recorded, stored securely, and only viewed by the researcher and perhaps a professional transcriptionist. The video interview will last approximately 45 minutes.
Participants will be given an opportunity to review their information collected to ensure it aligns with their intent.
Names and other identifying information will be requested as part of this study, but the information will remain confidential.
In order to participate, please contact me at [redacted] for more information.

A consent document is attached to this email. The consent document contains additional information about my research. Please sign the consent document and return it to me at the email address given above.

Sincerely,

James Eggleston
Doctoral Candidate
[redacted]

Appendix D: Recruitment Follow-Up

Dear [Recipient]:

As a graduate student in the School of Education at Liberty University, I am conducting research as part of the requirements for a doctoral degree. Last week/two weeks ago/etc.] an email was sent to you inviting you to participate in a research study. This follow-up email is being sent to remind you to respond if you would like to participate and have not already done so. The deadline for participation is [Date].

If you choose to participate, you will be asked to

- Fill out a brief questionnaire (for demographic purposes only).
- Download the *Calm* meditation app onto your smart phone and use it daily for two weeks. The app offers a daily meditation that is approximately ten minutes in length.
- After the two-week period of daily meditations is complete, you will meet over video chat to complete three document tasks which include a drawing (no art talents required), a written response to a prompt about your experience, and your selection of a meme/gif from the Internet that might best represent how you feel about your meditation experience. After that is done, there will be a 30-minute focus group discussion which will be recorded, stored securely, and only viewed by the researcher and perhaps a professional transcriptionist.
- Lastly, the researcher will schedule a personal interview with you over video chat to gain your perspective on the smartphone app experience. The interview consists of some open-ended questions and will be recorded, stored securely, and only viewed by the researcher and perhaps a professional transcriptionist. The video interview will last approximately 45 minutes. Participants will be given an opportunity to review their information collected to ensure it aligns with their intent.

Your name and/or other identifying information will be requested as part of your participation, but the information will remain confidential.

To participate, please contact me at [redacted] for more information.

A consent document is attached to this email. The consent document contains additional information about my research. Please sign the consent document and return it to me at the email address given above.

Sincerely,

James Eggleston
Doctoral Candidate

APPENDIX E: Participant Consent Form

Consent

Title of the Project: AN INSTRUMENTAL CASE STUDY OF THE STUDENT PERSPECTIVE OF A SMART PHONE MEDITATION APP IN RURAL VIRGINIA
Principal Investigator: James Eggleston, Doctoral Candidate, Liberty University

Invitation to be Part of a Research Study

You are invited to participate in a research study. In order to participate, you must be 18 years of age or older, currently enrolled as a high school senior or college student, must own a smartphone that will sustain the *Calm* app, and must provide signed consent agreeing to participate in the *Calm* mindfulness meditation app daily for two weeks and the data collection methods that follow. Taking part in this research project is voluntary.

Please take time to read this entire form and ask questions before deciding whether to take part in this research project.

What is the study about and why is it being done?

The purpose of the study is to determine how a mindfulness meditation app affects students in rural Virginia. Three potential areas of effect will be academic, social, and behavioral.

What will happen if you take part in this study?

If you agree to be in this study, I would ask you to do the following things:

1. Fill out a brief questionnaire (for demographic purposes only). Download the *Calm* meditation app onto your smart phone and use it daily for two weeks. The app offers a daily meditation that is approximately ten minutes in length.
2. After the two-week period of daily meditations is complete, you will meet over video chat to complete three document tasks which include a drawing (no art talents required), a written response to a prompt about your experience, and your selection of a meme/gif from the Internet that might best represent how you feel about your meditation experience. After that is done, there will be a 30-minute focus group discussion which will be recorded, stored securely, and only viewed by the researcher and perhaps a professional transcriptionist.
3. Lastly, the researcher will schedule a personal interview with you over video chat to gain your perspective on the smartphone app experience. The interview consists of some open-ended questions and will be recorded, stored securely, and only viewed by the researcher and perhaps a professional transcriptionist. The video interview will last approximately 45 minutes.

How could you or others benefit from this study?

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include an enhanced understanding of how a mindfulness meditation app might be successfully implemented into rural Virginia education systems.

What risks might you experience from being in this study?

The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.

The researcher is also bound to any mandatory reporting requirements for child abuse, child neglect, elder abuse, or intent to harm self or others should information be presented to that effect.

How will personal information be protected?

The records of this study will be kept private. Published reports will not include any information that will make it possible to identify a subject. Research records will be stored securely, and only the researcher will have access to the records. Data collected from you may be shared for use in future research studies or with other researchers. If data collected from you is shared, any information that could identify you, if applicable, will be removed before the data is shared.

- Participant responses will be kept confidential through the use of pseudonyms. Interviews will be conducted in a location where others will not easily overhear the conversation.
- Data will be stored on a password-locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews/focus groups will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.
- Confidentiality cannot be guaranteed in focus group settings. While discouraged, other members of the focus group may share what was discussed with persons outside of the group.

How will you be compensated for being part of the study?

Participants will not be compensated for participating in this study.

Is study participation voluntary?

Participation in this study is voluntary. Your decision whether to participate will not affect your current or future relations with Liberty University. If you decide to participate, you are free to not answer any question or withdraw at any time without affecting those relationships.

What should you do if you decide to withdraw from the study?

If you choose to withdraw from the study, please contact the researcher[s] at the email address/phone number included in the next paragraph. Should you choose to withdraw, data collected from you, apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but your contributions to the focus group will not be included in the study if you choose to withdraw.

Whom do you contact if you have questions or concerns about the study?

The researcher conducting this study is James Eggleston. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted]. You may also contact the researcher's faculty sponsor, Dr. Barbara Jordan-White, at [redacted].

Whom do you contact if you have questions about your rights as a research participant?

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd., Green Hall Ste. 2845, Lynchburg, VA 24515 or email at irb@liberty.edu

Your Consent

By signing this document, you are agreeing to be in this study. Make sure you understand what the study is about before you sign. You will be given a copy of this document for your records. The researcher will keep a copy with the study records. If you have any questions about the study after you sign this document, you can contact the study team using the information provided above.

I have read and understood the above information. I have asked questions and have received answers. I consent to participate in the study.

☐ The researcher has my permission to audio-record/video-record me as part of my participation in this study.

_____
Printed Subject Name

_____
Signature & Date

APPENDIX F: Consent Form (Parental/Student)

PARENT/GUARDIAN CONSENT FORM
AN INSTRUMENTAL CASE STUDY OF THE STUDENT PERSPECTIVE OF A SMARTPHONE MEDITATION APP IN RURAL VIRGINIA

This research study is being conducted by James Eggleston, a doctoral candidate in the education department at Liberty University. Your child was selected as a possible participant because he or she is a rural Southwest Virginia student aged 18 or older interested in actively engaging the *Calm* mindfulness meditation app daily. Please read this form and ask any questions you may have before agreeing to allow him or her to be in the study.

Why is this study being done?
The purpose of this study is to explore how a mindfulness meditation app affects students in rural Virginia.

What will my child/student be asked to do?
If you agree to allow your child to be in this study, [he or she] will be asked to do the following things:

4. Each participant will fill out a questionnaire, for demographic purposes only, that will remain secured and coded for anonymity. The student will select a pseudonym for the study and will be introduced to the mindfulness meditation app, *Calm*, which they will download to their smart phone for a two-week period of daily interaction.
5. Phase one of the researcher's data collection will consist of the participant's creation of documents for analysis (an art project, a writing example by way of journal prompt, and the selection of a meme/gif). In response to 2020 Covid-19 social distancing guidelines, this will be transmitted via email and all conversation will take place over recorded video chat.
6. A thirty-minute video chat discussion group session will immediately follow. This discussion will also be video recorded for later analysis by the researcher.
7. The final phase will be an individual interview scheduled at the participant's convenience. It may last approximately 45 minutes that will also take place over video chat. The interview will be video recorded for later analysis by the researcher.

What are the risks and benefits of this study?
Risks: The risks involved in this study are minimal, which means they are equal to the risks you would encounter in everyday life.
The researcher is also bound to any mandatory reporting requirements for child abuse, child neglect, elder abuse, or intent to harm self or others should information be presented to that effect.

Benefits:

Participants should not expect to receive a direct benefit from taking part in this study.

Benefits to society include an enhanced understanding of how a mindfulness meditation app might be successfully implemented into rural Virginia education systems.

Will my child be compensated for participating?
Your child will not be compensated for participating in this study.

How will my child's personal information be protected?
The records of this study will be kept private. In any sort of report I might publish, I will not include any information that will make it possible to identify a subject. Research records will be stored securely and only the researcher will have access to the records. I may share the data I collect from your child for use in future research studies or with other researchers; if I share the data that I collect about your child, I will remove any information that could identify [him or her], if applicable, before I share the data.

- I will conduct the interviews over a secure video chat.
- Data will be stored on a password locked computer and may be used in future presentations. After three years, all electronic records will be deleted.
- Interviews will be recorded and transcribed. Recordings will be stored on a password locked computer for three years and then erased. Only the researcher will have access to these recordings.
- I cannot assure participants that other members of the focus group will not share what was discussed with persons outside of the group.

Is study participation voluntary? Participation in this study is voluntary. Your decision whether or not to allow your child to participate will not affect his or her current or future relations with Liberty University. If you decide to allow your child to participate, he or she is free to not answer any question or withdraw at any time without affecting those relationships.

What should I or my child do if I decide to withdraw him or her or if he or she decides to withdraw from the study?

If you choose to withdraw your child or if your child chooses to withdraw from the study, please contact the researcher at the email address/phone number included in the next paragraph. Should your child choose to withdraw, any data collected from or about him or her, apart from focus group data, will be destroyed immediately and will not be included in this study. Focus group data will not be destroyed, but any contributions to the focus group will not be included in the study if you choose to withdraw your child of if your child chooses to withdraw.

Whom do I contact if my child or I have questions or problems?
The researcher conducting this study is James Eggleston. You may ask any questions you have now. If you have questions later, **you are encouraged** to contact him at [redacted] and/or [redacted]. You may also contact the researcher's faculty advisor, Dr. Barbara Jordan-White, at [redacted].

If you have any questions or concerns regarding this study and would like to talk to someone other than the researcher, **you are encouraged** to contact the Institutional Review Board, 1971 University Blvd, Green Hall 2845, Lynchburg, VA 24515 or email at irb@liberty.edu.

Please notify the researcher if you would like a copy of this information for your records.

☐ The researcher has my permission to video-record my child as part of his participation in this study.

_____

Signature of Student Date

_____

Signature of Parent Date

_____

Signature of Investigator Date

APPENDIX G: Screening Survey

AN INSTRUMENTAL CASE STUDY OF THE STUDENT PERSPECTIVE OF A SMART PHONE MEDITATION APP IN RURAL VIRGINIA

by James Allen Eggleston

Yes, I would like to participate in this study ☐

Name _____

Email Address _____

Telephone _____

Thank you for your interest in participating in the above study. The following is the required criteria for participant inclusion. Please certify and initial each criteria.

Are you 18 years of age or older? Yes ☐ No ☐ Initials _____

Do you own a Smartphone? Yes ☐ No ☐ Initials _____

Are you a currently enrolled student in High School or College? Yes ☐ No ☐

Initials_____

Are you a resident in rural Southwestern Virginia? Yes ☐ No ☐

Initials_____

APPENDIX H: Demographics Questionnaire

To protect the identity of each participant, a pseudonym will be used throughout this study. The following information will be kept in a secure location.

Name _____

One-Name Pseudonym of Choice _____

Gender Identification _____

Age _____

Grade Level _____

Race _____

Ethnicity _____

Any Known Medical Conditions

_____

_____

_____

_____

APPENDIX I: Artwork Lesson Plan

Using paper and any materials you may have (colored pencils and/or crayons, pencils, pens, etc.), please draw a picture that represents the impact meditation has, or has not had, on you. When you are done, please photograph the art and email it to the researcher.

APPENDIX J: Journal Response Worksheet

Part I: Written

Please describe your mental and physical state both before and after a meditation session. What differences, if any, do you observe or feel? If in the presence of other meditators, what differences do you notice in them?
Once complete, please email the entry to the researcher.

Part II: Meme/Gif Selection

(To be emailed/shared with the researcher)

Using a cell phone or computer, search the Internet for a gif or meme that might express your thoughts and/or feelings on meditation and its impact. Email that gif or meme to the researcher.

Note: Your reflections will remain confidential and, if shared in publication, your pseudonym will be used.

APPENDIX K: Focus Group Questions

1) Describe any changes in your level of compassion or understanding for your peers as a result of your involvement with the *Calm* mindfulness meditation app.
2) How has the *Calm* mindfulness meditation app helped you in developing leadership skills?
3) Since you became involved with the *Calm* mindfulness meditation app, what changes, if any, have you noticed regarding leadership?
4) Since participating in the *Calm* mindfulness meditation app, what changes, if any, have you noticed in your listening skills?
5) How has the *Calm* mindfulness meditation app helped you in bonding with others?
6) How has the *Calm* mindfulness meditation app fostered teamwork and collaboration among your peers?
7) In what ways has the *Calm* mindfulness meditation app affected your self-control and the way you manage disruptive emotions?
8) How has the *Calm* mindfulness meditation app affected your self-confidence and/or the self-confidence of your peers?

APPENDIX L: Individual Interview Questions

1) Please tell me more about yourself including what you might like most people to think of when they hear your name
2) What does meditation mean to you?
3) How does meditation affect different areas of your life?
4) Describe times when you may feel the need to practice meditation more often?
5) Discuss any time you practiced meditation outside of the daily app?
6) What changes, if any, have you noticed in your school work since you began meditating?
7) What changes, if any, have you noticed in your meditating peers' school work?
8) What changes, if any, have you noticed in your interaction with peers and teachers since you began meditating?
9) What impact, if any, do you believe meditation has on the way people behave?
10) What effect, if any, do you think meditation has on your resilience?
11) Describe some areas in your life where you feel like meditation has had an effect, good or bad?
12) Please share a story about something that happened that is connected to the meditation program.
13) Think of a teacher who has participated in the meditation program or app. What changes, if any, have you noticed in them and how did these changes affect you?
14) Describe any aspects at your school that might take place if the meditation program were a part of each day?
15) As we look at the drawing you made, tell me about what thoughts and feelings you are expressing in your work.

16) As we look at your journal entries, you shared some wonderful insight. What might you add to some of these entries?
17) What caught your eye when you selected this particular gif/meme to include in your journal?
18) Why do you think this meditation app works so well?
19) Is there anything else you want to share about the effect meditation has had on your life?

APPENDIX M: Researcher Field Notes Template

Date:_____

Time: _____

Pseudonym: _____

Descriptive Notes:

Reflective Notes (to be added after conclusion)